Vol. 1049 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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PATENTS

December 4, 1984

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

December 4, 1984 Volume 1049 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 45 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Apr. 13, 1984. *Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Dec. 1, 1981 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,302,847 through 4,304,004

Reissue Patents based on the above identified patents. No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))	$ 200.00
By other than a small entity	$ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f))	$ 50.00
By other than a small entity	$ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,934,274, Re. S.N. 629,244, Filed July 9, 1984, Cl. 003/036, DEFLATABLE MAMMARY AUGMENTATION PROSTHESIS, John H. Hartley, Jr., Owner of Record: *John H. Hartley, Jr. as Trustee, Intervivos Trust Agreement Dated Dec. 9, 1975 for the Benefit of Corinne S. Hartley, Mother and John H. Hartley Sr., Father,* Attorney or Agent: Harold D. Jones, Jr., et al., Ex. Gp.: 332

4,190,906, Re. S.N. 637,119, Filed Aug. 2, 1984, Cl. 002/16/A, BOWLER'S GLOVE AND WRIST SUPPORT, Edward E. Patton, Jr., Owner of Record: *Edward E. Patton, Sr.,* Attorney or Agent: Arthur G. Yeager, Ex. Gp.: 243

4,349,972, Re. S.N. 652,836, Filed Sept. 20, 1984, Cl. 037/055, SHELLFISH DREDGE CHAFING GEAR, Walter J. Bruce, Jr., Owner of Record: *Bruce's Splicing & Rigging Co., Inc., New Bedford, Mass.,* Attorney or Agent: John N. Williams, et al., Ex. Gp.: 323

4,350,298, Re. S.N. 653,311, Filed Sept. 20, 1984, Cl. 239/333, FOAM DISPENSER, Tetsuya Tada, Owner of Record: *Canyon Corp.,* Attorney or Agent: Stephen H. Frishauf, et al., Ex. Gp.: 313

4,350,508, Re. S.N. 651,813, Filed Sept. 18, 1984, Cl. 055/275, DESICCANT CAP, Dario S. Santoro, et al., Owner of Record: *D-Hydro Corp.*, Attorney or Agent: Frank R. Agovino, Ex. Gp.: 135

4,351,540, Re. S.N. 653,151, Filed Sept. 24, 1984, Cl. 280/242.OWC, WHEELCHAIR CONSTRUCTION, Jeffrey P. Minnebraker, Owner of Record: *Quadra Wheelchairs, Inc., Westlake Village, Calif.*, Attorney or Agent: Robert J. Schaap, Ex. Gp.: 316

4,414,594, Re. S.N. 619,973, Filed June 13, 1984, Cl. 360/106, LINEAR ACTUATOR FOR A MEMORY STORAGE APPARATUS, Paul L. Farmer, et al., Owner of Record: *Atasi Corp., San Jose, Calif.*, Attorney or Agent: Thomas S. MacDonald, et al., Ex. Gp.: 233

4,433,955, Re. S.N. 653,407, Filed Sept. 24, 1984, Cl. 415/001, TURBINE ARRANGEMENT, Richard P. Johnston, Owner of Record: *General Electric Co., Cincinnati, Ohio*, Attorney or Agent: Douglas S. Foote, et al., Ex. Gp.: 341

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Issues This Publication.

Erratum

"All reference to Patent No. 4,481,166 to Helmut Hollect, et al. of Germany for 'WEAR RESISTANT HARD METAL FREE OF TUNGSTEN CARBIDE' appearing in the *Official Gazette* of Nov. 6, 1984 should be deleted since no patent was granted."

PATENT NOTICES

Certificates of Correction for the Week of Dec. 4, 1984

Bl. 4,366,571	4,410,525	4,443,596	4,453,989
Re. 30,729	4,413,830	4,443,733	4,454,033
Re. 31,558	4,417,237	4,444,805	4,454,504
4,094,992	4,420,892	4,444,831	4,454,508
4,162,326	4,421,957	4,444,951	4,454,532
4,193,399	4,424,571	4,445,117	4,455,194
4,217,256	4,428,590	4,445,905	4,455,268
4,331,681	4,429,166	4,446,311	4,455,390
4,340,702	4,431,537	4,446,420	4,455,711
4,347,201	4,431,582	4,446,617	4,455,788
4,363,575	4,432,374	4,447,097	4,456,223
4,370,788	4,434,290	4,447,131	4,456,962
4,379,531	4,434,420	4,448,237	4,456,973
4,380,705	4,434,680	4,448,513	4,457,171
4,381,323	4,434,909	4,448,609	4,457,547
4,381,373	4,436,748	4,448,626	4,457,739
4,381,696	4,437,072	4,448,691	4,458,142
4,381,957	4,437,519	4,449,002	4,458,362
4,388,825	4,439,211	4,449,525	4,459,060
4,390,258	4,439,262	4,450,156	4,459,132
4,392,125	4,439,524	4,450,845	4,460,226
4,392,968	4,440,445	4,450,872	4,460,260
4,393,223	4,440,486	4,450,901	4,460,483
4,394,695	4,441,419	4,451,201	4,461,851
4,395,120	4,442,082	4,451,508	4,462,589
4,395,182	4,442,116	4,452,790	4,468,272
4,396,973	4,442,655	4,453,009	4,471,460
4,404,142	4,442,964	4,453,068	4,471,461
4,407,960	4,443,355	4,453,583	4,472,267

Disclaimers

3,872,547.—*Jack E. Caveney,* Chicago; *Roy A. Moody,* Flossmoor, both of Ill. ONE-PIECE CABLE TIE. Patent dated Mar. 25, 1975. Disclaimer filed Oct. 12, 1984, by the assignee, *Panduit Corp.*

Hereby enters this disclaimer to claims 16–25, 29–31, 35 and 38 of said patent.

3,906,593.—*Jack E. Caveney,* Chicago and *Roy A. Moody,* Flossmoor, both of Ill. INTEGRAL CABLE TIE. Patent dated Sept. 23, 1975. Disclaimer filed Oct. 10, 1984, by the assignee, *Panduit Corp.*

The term of this patent subsequent to May 9, 1989 has been disclaimed.

3,924,715.—*Halsey W. Cory,* Fairfield, Ohio. CLUTCH-BRAKE UNIT. Patent dated Dec. 9, 1975. Disclaimer filed Oct. 19, 1984, by the assignee, *Force Control Industries, Inc.*

Hereby enters this disclaimer to claims 1–8 of said patent.

4,001,718.—*Michael A. Wilson; Gordon E. Gee,* both of Sarasota; *Fred J. Momparler,* Bradenton, all of Fla. LINEAR OSCILLATOR FOR PROXIMITY SENSOR. Patent dated Jan. 4, 1977. Disclaimer filed Oct. 5, 1984, by the assignee, *Electro Corp.*

Hereby enters this disclaimer to claims 15 and 16 of said patent.

4,155,614.—*Harold E. Hall,* Middlefield, Ohio. CONNECTOR ASSEMBLY FOR ANODE BUTTON OF A CATHODE RAY TUBE. Patent dated May 22, 1979. Disclaimer filed Oct. 22, 1984, by the assignee, *Blasius Industries, Inc.*

Hereby enters this disclaimer to claims 1, 3, 4, 5, 7, 13 and 14 of said patent.

4,155,955.—*Carl R. Parks,* Akron, Ohio. CHEMICALLY BOUND ANTIOXIDANTS. Patent dated May 22, 1979. Disclaimer filed Aug. 27, 1984, by the assignee, *The Goodyear Tire & Rubber Co.*

Hereby enters this disclaimer to all claims of said patent.

4,422,094.—*Henry G. Lewis, Jr.,* Hamilton Square, N.J. and *Alfonse Acampora,* Staten Island, N.Y. DIGITAL SIGNAL PROCESSOR WITH SYMMETRICAL TRANSFER CHARACTERISTIC. Patent dated Dec. 20, 1983. Disclaimer filed Sept. 21, 1984, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to all claims of said patent.

Dedication

4,355,421.—*Joseph W. Modia* and *James McCarthy, III,* Fort Wayne, Ind. LIGHT FIXTURE, LIGHT APERTURE AND METHOD OF UNIFORMLY ILLUMINATING AN OPTICALLY DIFFUSIVE VIEWING AREA. Patent dated June 15, 1982. Dedication filed Sept. 27, 1984, by the assignee, *The Huey Co., Inc.*

Hereby dedicates to the public the entire remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: University of Massachusetts Library	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF October 1, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	6-18-82
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	6-15-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	6-19-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	9-24-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	6-29-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	2-22-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	10-28-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	5-09-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	4-07-82
DESIGN, GROUP 290—K. L. CAGE, Director	6-02-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	9-01-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	9-30-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	6-08-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	8-25-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	12-04-81

Expiration of patents: The patents within the range of numbers indicated below expire during October 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,344,433 to 3,350,717, inclusive

Plant Patents . . . . . Numbers 2,770 to 2,774 inclusive

REEXAMINATIONS

DECEMBER 4, 1984

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,473,430 (277th)
SEALING CLAMP

Herbert Niedecker, Am Ellerhang 6, Falkenstein, Taunus, Fed. Rep. of Germany

Reexamination Request No. 90/000,176, Mar. 22, 1982.
Reexamination Certificate for Patent No. 3,473,430, issued Oct. 21, 1969, Ser. No. 619,741, Mar. 1, 1967.
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1966, 18495; Mar. 17, 1966, 28230
Int. Cl.[3] B65D *55/08, 77/18;* F16B *2/26*
U.S. Cl. 411—172

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–11 are cancelled.

[1. A clamp for sealing packages which comprises a deformable member of a cross section having major and minor axes, wherein the major axis is of a dimension greater than said minor axis, said member having in the undeformed state a U-shape defined by a central portion and a pair of outer leg portions integrally connected to said central portion each by a curved length section, all transverse cross sectional areas of said central portion, leg portions and curved length sections being uniform throughout substantially the linear extent thereof and being symmetrical with respect to a common plane and having a singular line of maximum dimension corresponding to said major axis lying in said plane, the surface of said central portion and said leg portions at the interior of said maximum dimension with respect to said U-shape being round, said leg portions being spaced apart for receiving therebetween and against said central portion and curved length sections the neck of a package to be sealed, said leg portions being disposed for bending inwardly, together with their respective curved length sections, toward said central portion into a deformed state to encompass said package neck and compress same to seal the package.]

B1 3,541,647 (278th)
CASING CLIP

James W. Marietta, Jr., c/o D-Mar Company, 1116 W. 24th St., Los Angeles, Calif. 90007

Reexamination Request No. 90/000,177, Mar. 22, 1982.
Reexamination Certificate for Patent No. 3,541,647, issued Nov. 24, 1970, Ser. No. 788,297, Dec. 31, 1968.
Int. Cl.[3] B65D *55/08*
U.S. Cl. 24—30.5 W

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–10 are cancelled.

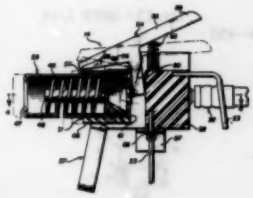
[1. A fastener to engage around and to tightly seal a gathered together opening end portion of a flexible container comprising, a normally U-shaped clip having a pair of elongated, laterally spaced, substantially parallel legs and an elongate crown formed integrally with and extending between related

ends of the legs, said legs and crown being adapted to be deformed into encircling pressure engagement about a gathered together opening end portion of a flexible container; said clip formed of wire of generally uniform cross-section and shaped to provide said legs and crown with two longitudinally extending, adjacent, parallel, container engaging, convex inner surfaces directed inwardly of said clip and a curved outer surface directed outwardly of said clip.]

B1 3,784,110 (279th)
MIXING AND DISPENSING GUN HAVING A REPLACEABLE NOZZLE

William R. Brooks, Elmhurst, Ill., assignor to Insta-Foam Products, Inc., Joliet, Ill.

Reexamination Request No. 90/000,460, Oct. 14, 1983.
Reexamination Certificate for Patent No. 3,784,110, issued Jan. 8, 1974, Ser. No. 307,092, Nov. 16, 1972.
Int. Cl.[3] B05B *7/12*
U.S. Cl. 239—304



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **4** is confirmed.

Claims **1** and **5** are determined to be patentable as amended.

Claims **2** and **3**, dependent on an amended claim, are determined to be patentable.

New claims **6–12** are added and determined to be patentable.

1. In a dispensing gun for mixing and discharging multi-component fluids, the gun comprising housing means, handle means affixed to the housing means for grasping the gun and aiming the discharge thereof, a plurality of valve means *and*

valve outlet passages [carried by] *disposed within* the housing means for controlling the flow of the multi-component fluid through the gun *and said valve outlet passages*, a plurality of connections adapted for cooperating in establishing a fluid pathway between said valve means and remote supply container means, and manually operable trigger means mounted on the housing means for controlling the valve means, the improvement comprising detachable mixing and dispensing nozzle means adapted [for communication with each of the valve means for receiving] *to receive* all the components of the multicomponent fluids, the nozzle means being internally configured to promote the mixing of the received fluid components, and having nozzle exit means to discharge the mixed fluid in a pre-determined direction, [nozzle seating means for orienting the nozzle means in a pre-determined discharge position, and nozzle latch means mounted on the housing means for selectively retaining the detachable nozzle means in a rigidly seated position relative to the housing and alternatively releasing the detachable nozzle means for removal from the nozzle seating means,] said nozzle means including a plurality of spaced apart ports for receiving each fluid component of the multi-component fluid at separated locations and delivering each component to the interior of the nozzle means in an unmixed condition, thereby confining all the fluid component mixing activity to the nozzle means interior[.], *nozzle seating means for orienting said nozzle means in a predetermined direction of discharge, and for aligning said spaced apart nozzle ports in registry with said valve outlet passages prior to engagement of said nozzle ports and said outlet passage in fluid-tight relation, and a nozzle latch means mounted on the housing means for selectively retaining the detachable nozzle means in a rigidly seated position relative to the housing and alternatively releasing the detachable nozzle means for removal from the nozzle seating means, said latching means being operative to retain said nozzle only when said nozzle ports are seated in registry and in fluid-tight relation with said outlet passages.*

B1 3,815,831 (280th)

IRRIGATION SPRINKLERS

Abraham S. Jooste, 13 Exmouth Rd., Cape Town, South Africa

Reexamination Request No. 90/000,443, Sep. 12, 1983.
Reexamination Certificate for Patent No. 3,815,831, issued Jun. 11, 1974, Ser. No. 343,663, Mar. 22, 1973.
Claims priority, application South Africa, Apr. 19, 1972, 72/2648
Int. Cl.³ B05B *1/14*
U.S. Cl. 239—498

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **4–6** and **11** are determined to be patentable as amended.

Claims **2**, **3** and **7–10**, dependent on an amended claim, are determined to be patentable.

1. A sprinkler, comprising:
a body;
means defining a passage through the body and having an inlet end and an outlet end, *the diameter of the passage being smaller than the diameter of the outlet end*;
means associated with the inlet end for connecting the passage to a water supply source;
a separate distribution cap, *constituted by a skirt and an integral endpiece at the end of the skirt and remote from the body, said skirt together with said integral endpiece defining an external step decrease in diameter of the cap and a substantially cylindrical space within the cap having a diameter greater than the diameter of said passage, said cap being* snap fit [on the sprinkler] *onto, carried on,* and extending over the outlet end of the passage, so that water issuing [therefrom] *from the outlet end* impinges thereon;
means defining a series of outlet perforations through the cap *wall in the defined external step decrease*, about at least part of the outer periphery thereof, so that water which has impinged on the cap may pass out through the perforations;
the cap, where the water impinges thereon having an at least [part-concial] *part-conical* surface with the apex thereof directed towards the outlet end of the passage *and in an axially fixed position to direct water emerging from the outlet end evenly towards the perforations;*
the longitudinal axis of the conical surface being [at least roughly] *substantially* coincident with the longitudinal axis of the outlet end.

B1 4,019,666 (281st)

FASTENER ATTACHING MACHINE HAVING MEANS FOR ORIENTING CAPS, BUTTONS, AND THE LIKE

Jonathan A. Foults, Wolcott, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Reexamination Request No. 90/000,396, Jun. 6, 1983.
Reexamination Certificate for Patent No. 4,019,666, issued Apr. 26, 1977, Ser. No. 630,449, Nov. 10, 1975.
Int. Cl.³ A41H *37/10, 37/04*
U.S. Cl. 227—119

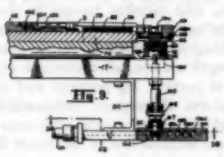


Fig. 9.

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **3**, **5**, **6** & **7** is confirmed.

Claims **1**, **2** and **4** are cancelled.

Claim **8** is determined to be patentable as amended.

Claim **9**, dependent on an amended claim, is determined to be patentable.

New claims **10** and **11** are added and determined to be patentable.

8. A fastener attaching machine *for fasteners having indicia-carrying front faces,* comprising a post and [die] *plunger,* the post being rotatable, means for delivering [the] *a* fastener element to the post in a predetermined *rotary* orientation *of the front face of the fastener element*, means for [holding] *firmly retaining* the fastener element centered on the [working end of the] post, [and] *drive* means for imparting to the post once it

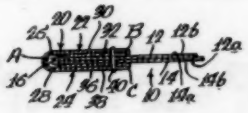
has received the fastener element a rotary shift to [a selected rotary position,] *reorient the fastener element, settable means for stopping the drive means with the fastener element at the desired re-orientation,* and means for moving the [die] *plunger* toward the [working end of the] post to [work the element] *attach the fastener.*

B1 4,301,206 (282nd)

SURGICAL WRAPPER

James S. Mills, Lake Forest, Ill., assignor to Medline Industries, Inc.

Reexamination Request No. 90/000,473, Nov. 25, 1983.
Reexamination Certificate for Patent No. 4,301,206, issued Nov. 17, 1981, Ser. No. 92,546, Nov. 8, 1979.
Int. Cl.[3] B32B *23/02*
U.S. Cl. 428—193



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is cancelled.

[1. A surgical wrapper comprising:

two overlapping layers of woven material, wherein each layer of woven material has generally the same dimensions, each layer has an inner surface juxtaposed to the inner surface of the other layer, and an outer surface that defines an outer surface of said surgical wrapper, and each layer has an outer edge along its perimeter,

woven tape means is folded lengthwise about said outer edge of said layers along a first fold line and has a first segment overlying the outer surface of one of said layers along a marginal portion of said one layer and a second segment overlying the outer surface of the other of said layers along a marginal portion of said other layer, and said first tape segment extends between said first fold line and one longitudinal edge of said tape means and said second tape segment extends between said first fold line and the other longitudinal edge of said tape segment,

said first segment is folded inwardly upon itself lengthwise along a second fold line to define a first portion between said first and second fold lines, and a second portion between said second fold line and said one longitudinal edge of said tape segment, said second portion has a smaller transverse dimension than said first portion and is positioned between said first portion and said outer surface of said one layer,

said second segment is folded inwardly upon itself lengthwise along a third fold line to define a first part between said first and third fold lines, and a second part between said third fold line and the other longitudinal edge of said tape segment, said second part has a smaller transverse dimension than said first part and is positioned between said first part and said outer surface of said other layer,

thread means for securing said tape means to said layers, said thread means extending through said two layers, said first portion and said second portion of said first segment of said tape means, and said first part and said second part of said second segment of said tape means for securing the tape means and the two layers together along said marginal portion of said layers while covering said outer edge of said layers, said thread means being positioned closer to said second and third fold than said first fold, and said thread means being positioned closer to said second and third fold than said first fold, said tape means extends along the entire length of said marginal portion of said layers.]

DEFENSIVE PUBLICATIONS

PUBLISHED DECEMBER 4, 1984

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T104,901

DESTRUCTION OF ORGANIC HAZARDOUS WASTE BY PARTIAL OXIDATION/GASIFICATION

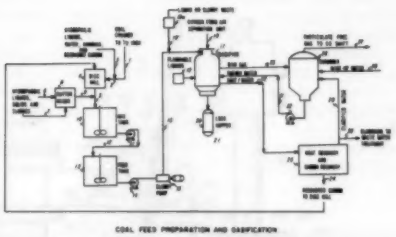
Doye B. Cox, 514 Lancaster Cir., and Hugh T. Carson, 5712 N. Morgan La., both of Chattanooga, Tenn. 37415

Filed Dec. 19, 1983, Ser. No. 562,788

Int. Cl.³ F23G *7/04*

U.S. Cl. 110—346

1 Sheets Drawing. 24 Pages Specification



COAL FEED PREPARATION AND GASIFICATION

Process for the thermal destruction of hazardous organic wastes utilizing high temperatures (2200° F.–3000° F.), long retention times (1.5–4 seconds), and high pressures (300+psi) in a reactor having a controlled partial oxidation environment to thermally break the bonds of organic molecules into CO, CO_2, H_2, and acid gases (such as H_2S, HCN, HCL). In the preferred embodiment, pulverized coal, organic waste matter, and slurry water are pumped into the reactor vessel. The coal and waste matter are both broken into simple gases and the slurry water is split into hydrogen and oxygen. Downstream processing equipment removes particulates, acid gases, and CO_2 making a product gas suitable for use as a fuel or chemical feedstock.

The process has distinct advantages over existing thermal hazardous waste destruction processes including, but not limited to, (1) energy and materials conservative, (2) fewer process control parameters, (3) can operate independent of waste availability, (4) limited exposure to the environment of any byproducts, (5) ability to recycle any incomplete destruction products, (6) most metals entering the system are fixated in a silicate slag, and (7) can handle waste not suitable to conventional incineration. This timely invention can help solve both the energy problem and problems with hazardous waste disposal.

T104,902

ADSORBABLE ARYLHYDRAZIDES AND APPLICATIONS THEREOF TO SILVER HALIDE PHOTOGRAPHY

Richard L. Parton, and James A. Friday, both of Kodak Park Div., Rochester, N.Y. 14650

Division of Ser. No. 493,554, May 11, 1983, Pat. No. 4,459,347. This application Feb. 6, 1984, Ser. No. 577,420

Int. Cl.³ G03C *1/28*

U.S. Cl. 430—603

No Drawing. 75 Pages Specification

The use of oxythioamido substituted arylhydrazides in producing images in silver halide photographic elements is disclosed. The oxythioamido substituted arylhydrazide can be incorporated in photographic silver halide emulsions. The oxythioamido substituent is capable of promoting adsorption of the arylhydrazide to silver halide grain surfaces. In negative working surface latent image forming emulsions the oxythioamido substituted arylhydrazides permit higher speeds to be achieved. In direct positive internal latent image forming emulsions increased nucleation activity can be achieved.

T104,903

PHOTOGRAPHIC SPEED INCREASING AND LATENT IMAGE STABILIZING COMPOUNDS

Roger Lok; John P. Freeman, and William H. Baum, all of Kodak Park, Rochester, N.Y. 14650

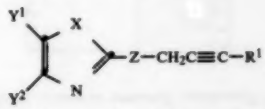
Division of Ser. No. 466,244, Feb. 14, 1983, Pat. No. 4,451,557, which is a continuation-in-part of Ser. No. 320,794, Nov. 12, 1981, Pat. No. 4,378,426. This application Feb. 7, 1984, Ser. No. 577,934

Int. Cl.³ C07D *515/00, 233/30*

U.S. Cl. 260—239 R

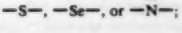
No Drawing. 24 Pages Specification

Photographic silver halide emulsions show increased speed and reduced latent image fading when a compound of the following structure is incorporated:



wherein:

X is



Y^1 and Y^2 individually represent hydrogen or an aromatic nucleus or together represent the atoms completing a fused aromatic nucleus;

Z is

R is hydrogen or lower alkyl of from 1 to 5 carbon atoms; and

R^1 is hydrogen or methyl.

T104,904

ELECTROPHOTOGRAPHIC IMAGING METHOD

Paul D. VanderValk, Kodak Park Division, Rochester, N.Y. 14650

Filed Mar. 2, 1984, Ser. No. 585,645

Int. Cl.³ G03G *13/22, 5/14*

U.S. Cl. 430—31

No Drawing. 9 Pages Specification

A method of forming electrostatic images on a photoconductive element is disclosed. The method entails imagewise-exposing the photoconductive layer in the element to actinic radiation passing in sequence through an integral screen and a transparent support spacing the screen from the photoconductive layer in the element.

DEFENSIVE PUBLICATIONS

PUBLISHED DECEMBER 6, 1988

The following are defensive publications filed by inventors who desire to establish the existence of their disclosures as of the publication date, but who do not desire the burden and expense of prosecuting patent applications. Defensive publications are not patents and do not have the force and effect of patents. They may be abandoned, withdrawn, or contested at any time by the inventors or their assignees. They are published as received from the inventors or their agents.

T 858,001
PHOTOCOAGULATOR DEVICE INCORPORATING AN ILLUMINATED
DIRECTION INDICATING ELEMENT
Thomas John Stover, Jr. et al., Filed Dec. 14, 1966, Ser. No. 601,841, 2 Claims. (Cl. 128—303)

T 858,002
ELECTRONIC CIRCUIT FOR MEASURING BLOOD PRESSURE
Robert Allen Phillips, Filed Dec. 28, 1966, Ser. No. 605,123, 4 Claims. (Cl. 128—2.05)

T 858,003
METHOD OF PREPARING 2-(4-ISOBUTYLPHENYL)-PROPIONIC ACID
Stewart Adams et al., Filed Dec. 30, 1966, Ser. No. 606,789, 3 Claims. (Cl. 260—514)

T 858,004
APPARATUS FOR MEASURING THE VISCOSITY OF BLOOD
Leonard Herman Cohen, Filed Jan. 3, 1967, Ser. No. 607,456, 5 Claims. (Cl. 128—2.05)

T 858,005
METHOD OF PREPARING 1-(2-HYDROXYETHYL)-2-METHYL-5-NITROIMIDAZOLE
Jean-Claude Maillard et al., Filed Jan. 5, 1967, Ser. No. 608,012, 2 Claims. (Cl. 260—309.6)

T 858,006
SURGICAL SUTURE MATERIAL AND METHOD OF MANUFACTURE
Robert Edward Schmitt, Filed Jan. 9, 1967, Ser. No. 609,345, 6 Claims. (Cl. 128—335.5)

T 858,007
ELECTROENCEPHALOGRAPHIC IMAGING METHODS
Paul D. Hamilton, Jr. et al., Filed Jan. 11, 1967, Ser. No. 610,234, 4 Claims. (Cl. 128—2.06)

T 858,008
METHOD OF PREPARING 4-PHENYL-2-QUINAZOLINONE
Hans Meier et al., Filed Jan. 13, 1967, Ser. No. 611,567, 2 Claims. (Cl. 260—239.3)

T 858,009
METHOD OF PREPARING 2-(4-ISOBUTYLPHENYL)-PROPIONIC ACID
Stewart Adams et al., Filed Jan. 16, 1967, Ser. No. 612,890, 3 Claims. (Cl. 260—514)

T 858,010
METHOD OF PREPARING 1-(2-HYDROXYETHYL)-2-METHYL-5-NITROIMIDAZOLE
Jean-Claude Maillard et al., Filed Jan. 18, 1967, Ser. No. 613,678, 2 Claims. (Cl. 260—309.6)

REISSUES

DECEMBER 4, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,751
APPARATUS FOR LOADING A PULL TAB ON A SLIDER BODY

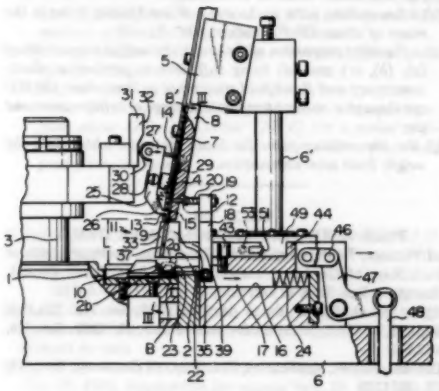
Tsutomu Hakoi, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Original No. 4,296,547, dated Oct. 27, 1981, Ser. No. 106,041, Dec. 21, 1979. Application for reissue Oct. 27, 1983, Ser. No. 546,106

Claims priority, application Japan, Dec. 29, 1978, 53-165293; Dec. 29, 1978, 53-165294

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—766 **3 Claims**



1. An apparatus for loading a pull tab on a slider body in a machine for progressively assembling sliders for slide fasteners, said machine comprising a base, a turret supported on the base for intermittent rotation about its center axis and having a plurality of spaced-apart recesses arranged circumferentially around and on said turret for receiving and holding a slider body, a plurality of assembling stations arranged around the periphery of said tusret, and means for intermittently rotating said turret so as to position a slider body holding recess successively opposite each of the stations, said apparatus being at one assembling station of said assembling stations and comprising a pull tab supply means and a pull tab holding means; said pull tab supply means includes a holder provided on the base, a chute supported by said holder and extending substantially vertically for receiving longitudinally aligned pull tabs therein and directing them toward a pull tab receiving portion in said recess by gravity, and means for discharging pull tabs one by one from the chute; said pull tab holding means is positioned between an outlet of said chute and the pull tab receiving portion of said recess and is movable between an advanced position and a retracted position; said pull tab holding means being arranged to form a guide channel for receiving a pull tab discharged from the chute between said outlet of said chute and the pull tab receiving portion of said recess in said advanced position, and means for opening the guide channel in said retracted position to thereby release a pull tab therefrom to drop said tab into said pull tab receiving portion of said turret recess.

Re. 31,752
CONTINUOUS STATIONERY ASSEMBLIES

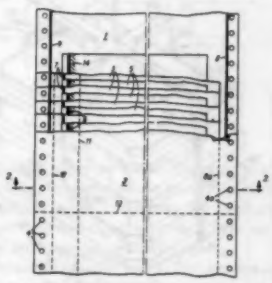
Per W. Halse, Oslo, Norway, assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Original No. 4,121,857, dated Oct. 24, 1978, Ser. No. 817,859, Jul. 21, 1977. Continuation-in-part of Ser. No. 727,518, Sep. 28, 1976,. Application for reissue Oct. 23, 1980, Ser. No. 199,852

Claims priority, application United Kingdom, Jul. 21, 1976, 30407/76

Int. Cl.³ B41L *1/20, 1/26*

U.S. Cl. 282—11.5 A **10 Claims**



5. A continuous stationery assembly, comprising, a continuous pair of superimposed outer webs each having aligned opposed left and right marginal edges, said webs having longitudinal feed strips extending along each of said right marginal edges, said webs being directly connected together along longitudinal first connecting means lying adjacent said right marginal edges, one of said webs having a longitudinal first line of weakening spaced inwardly of said first connecting means, at least one intermediate web disposed between said outer webs, said intermediate web having a free marginal edge lying inward of said first line of weakening, said one outer web having a longitudinal second line of weakening adjacent said left marginal edge, said intermediate web being connected to both said outer webs along longitudinal second connecting means disposed between each said left marginal edge of said outer webs and said second line of weakening, said intermediate web having a longitudinal third line of weakening in alignment with said second line of weakening.

Re. 31,753
METHOD OF HOLLOW ARTICLE CASTING

Joseph M. LaVergne, Jr., Spanaway, Wash., assignor to Joseph M. LaVergne, Sr., Spanaway, Wash.

Original No. 3,542,914, dated Nov. 24, 1970, Ser. No. 692,940, Dec. 22, 1967. Application for reissue Jun. 20, 1983, Ser. No. 505,711

Int. Cl.³ B28B *1/14;* B29C *7/00*

U.S. Cl. 264—250 **18 Claims**

10. A method of upright casting of a full height septic tank, comprising:

locating an inner mold part having a top and upwardly tapering side wall means at a pouring site;

inserting over said inner mold part an outer mold part having upwardly tapering side wall means which when the two mold parts are assembled is spaced laterally outwardly from the

side wall means of the inner mold part and also projects upwardly above the top of the inner mold part;

introducing a plastic or fluid substance of a type which sets into a solid into the space between the respective side wall means of the two mold parts and into the space above the top of the inner mold part which is bounded by the upwardly projecting portion of the side wall means of the outer mold part, so as to cast together integral tank top and side wall means;

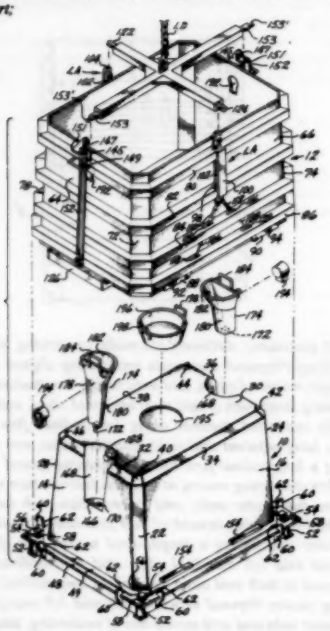
forming at least one opening in the top of said tank;

establishing bottom keying components in the lower portions of the tank side walls while forming the tank top and side wall means;

allowing said substance to set up at least until the top and side walls of said tank are self-supporting;

applying a separating force between the inner and outer mold parts, and at the same time applying a lifting force on the outer mold part and the tank therein, as an assembly, so as to separate such assembly from the inner part;

lifting said assembly upwardly completely free of said inner mold part;



setting said assembly down on a supporting surface in a curing site spaced from the pouring site;

lifting upwardly on the outer mold part alone, to cause its separation from the tank;

lifting said outer mold part upwardly and completely free of said tank and removing it from the site of said tank;

returning said outer mold part to the pouring site, for reinsertion over an inner mold part;

introducing an additional amount of said substance through said access opening and into said tank, and depositing such substance on said supporting surface, in the area between the tank side wall means, so as to form a bottom for said tank;

firmly connecting said bottom to the lower peripheral portion of said tank side wall means while forming said bottom, including using said keying components for mechanically keying the bottom to the tank side wall means;

lifting the completed tank, including the bottom free of said supporting surface following sufficient hardening of the bottom and connection of the bottom to the side wall means.

Re. 31,754

LOW-FAT COMESTIBLE SPREAD SUBSTITUTES

Donald E. Miller, Norcross, Ga., and Cecilia Gilmore, Strongsville, Ohio, assignors to SCM Corporation, New York, N.Y.

Original No. 4,284,655, dated Aug. 18, 1981, Ser. No. 142,802, Apr. 22, 1980. Application for reissue Sep. 30, 1982, Ser. No. 429,220

Int. Cl.[3] **A23D** *5/00, 3/00*

U.S. Cl. 426—602 **23 Claims**

18. A flavored comestible spread consisting essentially of an oil-in-water dispersion of

(a) water;

(b) a partial glyceride ester composition containing about 38–48% diglyceride, monoglyceride present in the ratio monoglycerides to diglycerides of about 1:5 to 1:1.5 based on the diglyceride content, and triglyceride in an amount less than the mono- and diglyceride contents combined, said partial glyceride having a Capillary Melting Point less than about 120° F.;

(c) surface active cellulosic thickener;

(d) a low melting point fat having a Wiley Melting Point in the range of about 75° F. to about 106° F.; and

(e) a flavoring proportion of flavorant; the weight proportions of (a), (b), (c) and (d) being sufficient to produce a plastic consistency and Brookfield viscosity of at least about 100,000 cps through a normal temperature range of refrigeration and use;

(f) the low melting point fat being less than about 20% by weight basis total composition.

Re. 31,755

TOOL AND CHUCK FOR HAMMER DRILL

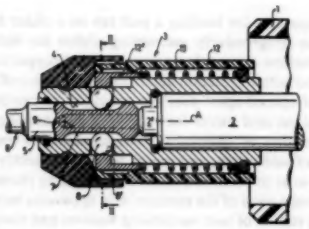
Karl Wanner, Echterdingen, and Klaus Voss, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Original No. 4,107,949, dated Aug. 22, 1978, Ser. No. 725,193, Sep. 21, 1976. Application for reissue Jun. 20, 1980, Ser. No. 162,040

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1975, 2551125

Int. Cl.[3] **F16D** *3/06;* **B23B** *31/06, 31/16*

U.S. Cl. 464—167 **22 Claims**



1. In a combination with a chuck having a tool receptacle defining a chuck axis, a rotary and impact tool having a shank defining a tool axis and receivable in said receptacle; cooperating means on said shank and said receptacle for retaining said tool in said receptacle against extraction therefrom while permitting axial displacement of the tool relative to the receptacle so that the tool can transmit axial impact to a workpiece; and means separate from said cooperating means and operative for transmitting torque between said chuck and said tool, including an axially extending groove separate and circumferentially spaced from said cooperating means, said groove being axially open at the end of said shank and having at least one flank extending substantially radially of said tool axis, said torque transmitting means further including a rotary-entrainment formation in said receptacle formed with at least one side flatly engageable with said flank.

Re. 31,756

MODIFIED POLYIMIDE FOAMS AND METHODS OF MAKING SAME

John Gagliani, 6280 Lance Pl., San Diego, Calif. 92120, and John V. Long, 1756 E. Lexington Pl., El Cajon, Calif. 92021

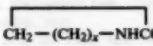
Original No. 4,394,464, dated Jul. 19, 1983, Ser. No. 390,778, Jun. 21, 1982. Application for reissue Dec. 27, 1983, Ser. No. 565,574

Int. Cl.³ C08J 9/22, 9/24

U.S. Cl. 521—56 24 Claims

14. A method of making a foamable modified polyimide which comprises the steps of:

reacting an aromatic dianhydride with an oxoimine having the general formula:



wherein "x" is an integer from 2 to 4, in a mole ratio of oxoimine to dianhydride between about 1.5:1 and about 0.05:1 to produce an N-substituted aliphatic imide;

dissolving said imide in a reactive solvent esterifying agent to esterify said imide; and

drying the resulting solution,

whereby the dried solution when heated to a temperature of from about 120° C. to about 320° C. for a period of from about 10 to about 60 minutes, forms a resilient foam having good flame resistance.

Re. 31,757

COMPOSITION AND A METHOD FOR CONTROLLING REACTION PRESSURES DURING THE FOAMING PROCESS RESULTING IN AN EASILY FLAME RETARDED FOAM-IN PLACE INSULATION

Richard B. Kennedy, Ridgefield, Conn., assignor to Patrick J. Crehan and Richard J. Fricke, both of Ridgefield, Conn., part interest to each

Original No. 4,291,129, dated Sep. 22, 1981, Ser. No. 162,821, Jun. 25, 1980. Application for reissue Nov. 23, 1982, Ser. No. 443,877

Int. Cl.³ C08G 18/14

U.S. Cl. 521—103 36 Claims

1. A low reactive pressure flame-retardant polyurethane foam made by reacting together a [polymeric isocyanate] *polyisocyanate,* a conventional polyol, a surfactant, [a blowing agent] and an aqueous solution *or slurry* of a carbohydrate, calcium acid phosphate, sodium aluminum sulfate, sodium bicarbonate, and flame retardant.

Re. 31,758

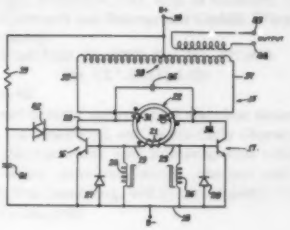
HIGH EFFICIENCY PUSH-PULL INVERTERS

Ole K. Nilssen, 1984 Caesar Dr., Rte. 4, Barrington, Ill. 60010

Original No. 4,184,128, dated Jan. 15, 1980, Ser. No. 890,586, Mar. 20, 1978. Continuation of Ser. No. 147,872, May 8, 1980, abandoned. Application for reissue Feb. 5, 1982, Ser. No. 346,157

Int. Cl.³ H02M 1/18, 7/48; H05B 41/29

U.S. Cl. 331—113 A 18 Claims



12. In a push-pull inverter circuit connected to a unidirectional voltage input and being operable to provide an alternating voltage output, the inverter circuit comprising two alternately conducting transistor switching means, each having a base, an emitter and a collector, the improvement which comprises:

separate saturable inductor means that are non-coupled to each other for each said transistor switching means and being connected in circuit with the base-emitter junction thereof;

whereby voltage on the base of each said transistor switching means for a predetermined time period serves to saturate the respective saturable inductor means associated therewith;

each said saturable inductor means being operable, when saturated, to terminate the flow of base current for its associated transistor switching means and to provide a path for rapid evacuation of charge carriers stored in the base-emitter junction of said associated transistor switching means to render the latter rapidly non-conductive.

PLANT PATENTS

GRANTED DECEMBER 4, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,360

ROSE NAMED LADY DIANA

Lowell L. Hoy Jr., Richmond, Ind., assignor to Joseph H. Hill Company, Richmond, Ind.

Filed Jun. 20, 1983, Ser. No. 505,833
Int. Cl. A01H *5/00*
U.S. Cl. Plt.—18 1 Claim

1. A new and distinct rose plant cultivar, substantially as herein shown and described, characterized by its abundant, profuse and continuous production of medium large flowers having a soft, clear shade of pastel pink color borne on medium-to-long straight upright stems with profuse foliage.

5,361

KALANCHOE PLANT NAMED SINGAPUR

Hermann Finger, Wiesmoor, Fed. Rep. of Germany, assignor to Wiesmoor-Gartnerei und Baumschule GmbH, Wiesmoor, Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 477,932
Int. Cl. A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of Kalanchoe named Singapur, as described and illustrated, and particularly characterized by its vigorous growth habit and free branching, highly floriferous, with numerous cherry colored flowers formed at every shoot, excellent keeping quality, and its suitability for production in 8 to 15 cm. pots.

5,362

KALACHOE PLANT NAMED SERAYA

Hermann Finger, Wiesmoor, Fed. Rep. of Germany, assignor to Wiesmoor-Gartnerei und Baumschule GmbH, Wiesmoor, Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 477,933
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of Kalanchoe named Seraya, as described and illustrated, and particularly characterized by its highly floriferious habit, with numerous rose colored flowers at every shoot, attractive foliage, compact and moderate growth habit, free branching, and by its suitability for production in 8 to 15 cm. pots.

5,363

VARIETY OF STREPTOCARPUS NAMED SWEN KUREN

Herbert Kaiser, Rieskirchen, Fed. Rep. of Germany, assignor to Oglevee Associates, Inc., Connelsville, Pa.

Filed May 13, 1983, Ser. No. 494,552
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

PLANT PATENTS

GRANTED DECEMBER 8, [illegible]

PATENTS

GRANTED DEC. 4, 1984

ERRATA

For CLASS	See PATENT NO.
280–605	4,485,536
446–117	4,485,585
446–448	4,485,586
446–442	4,485,587
126–001	4,485,797
152–209	4,485,832
164–046	4,485,834
164–430	4,485,835
164–442	4,485,836
164–448	4,485,837
164–462	4,485,838
164–463	4,485,839
384–535	4,486,055
384–477	4,486,056
106–177	4,486,119
530–501	4,486,346
534–797	4,486,347
534–741	4,486,348
430–508	4,486,386
422–254	4,486,395
331–004	4,486,717

PATENTS

GRANTED DEC. 4, 1962

3068474

PATENTS

GRANTED DECEMBER 4, 1984

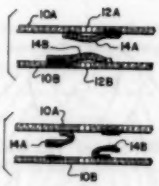
GENERAL AND MECHANICAL

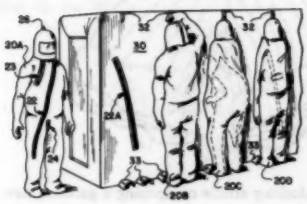
4,485,489

ENTRANCE AND EGRESS SYSTEM FOR PROTECTIVE SHELTERS AND GARMENTS

Roland J. Pilié; Norris E. Shoemaker, and Charles K. Akers, all of Williamsville, N.Y., assignors to Calspan Corporation, Buffalo, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,100
Int. Cl.³ A62B *17/00*; A41D *13/00*
U.S. Cl. 2—2 **13 Claims**





1. A system for attaching and detaching and providing safe passage between a pair of panels such as wall members of protective enclosures at least one of which is portable, and which may afford a protective environment to persons or items therewithin,

said enclosures each comprising an eveloping structure having at least one panel, said enclosures being adapted to be brought in position such that said panels abut,

means defining a first opening in one of said panels and a second opening in the other panel, said openings being dimensioned and arranged to be co-extensive when said panels are in abutting position,

fastener means attached to each of said openings and adapted for repeated opening and closing thereof,

fastener flaps on the exterior of each of said panels surrounding and totally covering said primary fastener means,

said flaps and fastener means being cooperative when opened to interengage and to fasten said panels together with said first and second openings aligned and thus forming a passage between the interiors of said enclosures.

13. A method for providing safe passage between a pair of protective enclosures, at least one of which is portable, and which afford a protective environment to persons or items therewithin, said enclosures each comprising an eveloping structure having at least one panel with an opening therein, said openings being dimensioned and arranged to be co-extensive when said panels are in abutting position and being controlled by fastener means attached to each of said openings and adapted for repeated opening and closing thereof, said fastener means including flaps on the exterior of each of said panels surrounding and totally covering said fastener means; the steps comprising

releasing the secondary fastener means to open the flaps,

bringing the flaps on one of the panels into abutting relation with the flaps on the other panel and interlocking the two fastener means to provide a connection between the panels surrounding the fastener means, and

opening the fastener means to form a passageway between the enclosures which is surrounded and sealed by the interengaged fastener means.

4,485,490

APPARATUS FOR TREATING CASUALTIES IN A CONTAMINATED AREA

Charles K. Akers, and Roland J. Pilié , both of Williamsville, N.Y., assignors to Calspan Corporation, Buffalo, N.Y.

Filed Jun. 6, 1983, Ser. No. 501,733
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—2 **6 Claims**

1. Apparatus for the treatment of a casualty within a contaminated environment, said casualty being enclosed within a protective garment including first fastener means for permitting access into the interior of said garment, said treatment apparatus comprising:

container means for providing uncontaminated treatment space therein, said container means including an access opening;

second fastener means for closing said access opening in said container means, said second fastener means being compatible with at least a portion of said first fastener means to permit coupling of said container means to said garment such that said treatment space communicates with the interior of said protective garment;

handling means in said container means for permitting sealed insertion of the hands of treating personnel into said treatment space; and

window means in said container means for observing said treatment space.

4,485,491

METHOD OF FITTING A BALLISTIC PANEL CARRYING GARMENT

Conrad K. Rasmussen, Nashville, Tenn., assignor to Horace Small Manufacturing Company, Nashville, Tenn.

Filed May 3, 1983, Ser. No. 491,076
Int. Cl.³ F41H *1/02*
U.S. Cl. 2—2.5 **7 Claims**

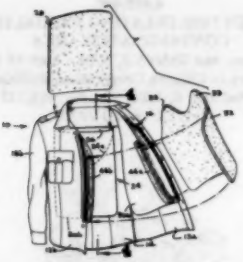
1. A method of adapting a ballistic panel carrier garment to receive and to support selected of a plurality of ballistic panels of varying size and configuration in a manner to position the selected panels without shifting with respect to the vital body parts of the garment wearer, the ballistic panel carrier garment having a front portion and a back portion, a back receptacle having an opening for receiving a back ballistic panel into a back pocket formed thereby, said back receptacle being attached to the back portion, a front receptacle having an open-

ing for receiving a front ballistic panel into a front pocket formed thereby, the front receptacle being attached to the front portion, each of the front and back portions having a corresponding reference point defining the extent of ballistic protection, said method of adapting comprising the steps of:

(a) disposing the garment on the wearer;

(b) measuring the extent of ballistic protection from the reference point of each of the front and back portions to provide corresponding front and back measurements;

(c) opening the garment to expose the front and back receptacles;



(d) measuring distances corresponding to said front and back measurements from the reference points along the front and back receptacles, respectively, and marking the termination points of the front and back measurements on the corresponding of the front and back receptacles; and

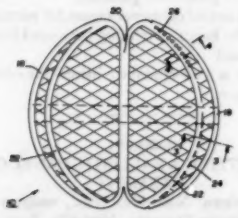
(e) restricting the extent of the pocket formed by each of the front and back receptacles in accordance with said back and front termination points, respectively, whereby the back and front receptacles are adapted to position without shifting their respective ballistic panels with respect to the vital parts of the garment wearer's body.

4,485,492

GARMENT SHIELD WITH REMOVABLE OUTER PORTIONS

Vincent R. Saelder, 3422 Hallcrest Dr., Hampton Hall, Atlanta, Ga. 30319

Filed Oct. 26, 1983, Ser. No. 545,637
Int. Cl.³ A41D *27/12*
U.S. Cl. 2—56 **10 Claims**



1. A garment shield having a contoured outer periphery, this shield used for underarm protection and having a central portion which is thinner and sealed to provide a folding area at said central portion, this shield characterized as having a porous cover, filler portion and an impervious backing which has releasable adhesive means adapted to secure said shield within the garment, said shield also including:

(a) a peripherial heat seal of said cover to said backing;

(b) a heat seal at said central portion adapted to secure the cover to the backing and enabling folding to be easily achieved,

and

(c) at least one additional heat sealed portion disposed at a determined distance in from the initial outer peripherial edge of the shield and a line of perforations formed in and through at least the cover and positioned at the outward edge of said additional heat seal so as to maintain a heat sealed edge when that portion exterior of or outward from said perforations is removed so as to reduce the extent of the shield.

4,485,493

CONVERTIBLE CLOTHING ARTICLE

David Leinoff, 71 Park Avenue, New York, N.Y. 10016

Filed Sep. 12, 1983, Ser. No. 531,442
Int. Cl.³ A41B *3/02*
U.S. Cl. 2—86 **9 Claims**

1. A convertible clothing article comprising a garment having interconnected shoulders, back and front sides adapted to cover the body of a wearer, said front sides having separated front edges, said front including a facing portion folded over said front edges to the interior of the garment and said front, sides and back defining a continuous bottom edge for the garment, said back having a vent formed therein extending from said bottom edge part way up the back, said facing including a selectively operable flap portion extending upwardly a predetermined distance from said bottom edge, means for selectively securing said flap portion in a first position to the inside of the front edges of the garment to form a coat and means for selectively securing said flaps in a second position to the inside of the back of the garment adjacent said vent to form culottes.

4,485,494

GARMENT

Avrahaum Segol, 320 West 87th St., New York, N.Y. 10023

Filed Jul. 5, 1983, Ser. No. 510,572
Int. Cl.³ A41B *1/00*
U.S. Cl. 2—115 **10 Claims**

7. A Jewish religious garment comprising;

an upper torso front piece;

an upper torso back piece encircling a portion of the front piece; and said pieces being stitched so that the back piece is provided with two free edges at the outside front of the garment and the front piece is provided with two free edges at rear portion of the garment, wherein the front and back pieces are opened at about the sides for about ⅓ of the length of the sides, said respective free edges being formed with respective bottom corners, each of said corners further comprising means to attach fringes, and fringes being attached to said corners, said fringes being tzitzioth, said laundering means comprising an elongated

tubular bag having means to open and close the bag, said bag being formed to receive said attached fringes of the

garment when the bag is opened, and the bag is closed with the fringes therein for laundering of the fringes without damage to the fringes.

4,485,495

DISPOSABLE CAP FOR NEWBORN BABY

Audrey T. Lunt, 6371 Vermont Hill Rd., South Wales, N.Y. 14139

Filed Jan. 11, 1983, Ser. No. 435,056
Int. Cl.³ A42B *1/02, 1/04*
U.S. Cl. 2—197 **5 Claims**

1. A standardized cap wearable on the head of a newborn infant to reduce heat losses, said cap fitting on heads in a broad range of infant head sizes, said cap comprising:

A a pair of identical fabric blanks in superposed relation having an arched shape including an arcuate margin and a base, said blanks being formed of an ultrasonically fusable, non-woven, synthetic sheet material and being ultrasonically seamed along a line conforming to the margin to create a dome having a seamed ridge which protrudes from the exterior thereof and whose size is such that the dome will fit over the largest size in said range, said material having a grain orientation which renders it non-stretchable in the longitudinal direction which is normal to said base and somewhat stretchable in the transverse direction, whereby the cap is yielded to afford a comfortable fit; and

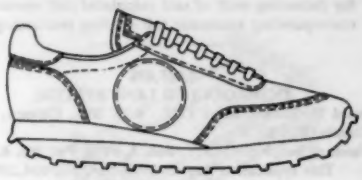
B a tape ultrasonically welded across the lower rear exterior section of the dome which is formed into an array of folds to define a shirred zone, the taped zone, reducing the size of the dome to below the smallest size in the range, the tape being of stretchable material whereby the zone is expandable to accommodate the cap of any head size in the range.

4,485,496

ARTICLE OF APPAREL

Ralph Shanks, Jr., 4112 Candlenut La., Dallas, Tex. 75234

Filed Sep. 29, 1982, Ser. No. 426,765
Int. Cl.³ A41D *27/20*
U.S. Cl. 2—247 **10 Claims**



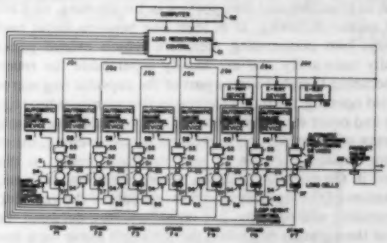
1. A detachable pocket comprising a cylindrically shaped wall member, a front circular end and a back circular end joined to said wall member to form a closed cylindrically shaped enclosure, said front circular end having an opening therein to provide access to the interior of said enclosure, and two rings of attachment material severally disposed in juxtaposed relationship upon the exterior surfaces of said front circular end and said back circular end.

4,485,497

APPARATUS FOR CONTROLLING RE-DISTRIBUTION OF LOAD ON CONTINUOUS ROLLING MILL

Keiichi Miura, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP80/00320, § 371 Date Jul. 28, 1981, § 102(e) Date Jul. 28, 1981, PCT Pub. No. WO81/01805, PCT Pub. Date Jul. 9, 1981
PCT Filed Dec. 23, 1980, Ser. No. 287,761
Claims priority, application Japan, Dec. 27, 1979, 54-170738
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—469 **2 Claims**



1. An apparatus for controlling the re-distribution of a load on a continuous rolling mill comprising:

a plurality of roll stands for successively rolling a rolled material;

a rolling force sensor means disposed at each of said roll stands for sensing a rolling load thereon;

a rolled material product gauge sensor for sensing an exit gauge at a last roll stand of said plurality of roll stands;

an automatic roll opening positioning means for each of said plurality of roll stands for controlling a roll opening of its corresponding roll stand;

a memory means for storing therein a ratio of reference rolling forces Pio with respect to said plurality of roll stands or a ratio of reference exit gauges hi between pairs of said plurality of roll stands when said plurality of roll

stands are at their optimum rolling conditions for rolling said rolled material; and

a screw-down correction computer means for calculating a roll opening Si at each of said plurality of roll stands so that a deviation ΔPi in a reference rolling force Pio at each of said plurality of stands from an actual rolling force Pir sensed by its corresponding rolling force sensor means is maintained at said corresponding ratio of reference rolling forces stored in said memory means and so that an exit gauge at said last roll stand is equal to a desired gauge, and for delivering each of said calculated roll openings to its corresponding automatic roll opening positioning means.

4,485,498

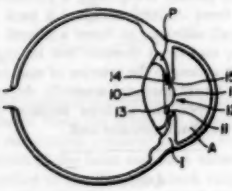
INTRAOCULAR LENS SYSTEM

Howard V. Gimbel, 103 - 1711 - 4 St. SW., Calgary, Alberta, Canada (T2S 1V7)

Division of Ser. No. 156,072, Jun. 3, 1980, Pat. No. 4,342,123. This application Aug. 5, 1982, Ser. No. 404,290

Int. Cl.³ A61F *1/16, 1/24*

U.S. Cl. 3—13 **10 Claims**



1. An artificial intraocular lens system constructed and arranged to be implanted within an opening in the capsular bag of the normal lens of an eye immediately adjacent the iris of the eye to supplant or replace the normal lens of the eye, comprising an optical lens portion formed of biologically tolerable, optically suited material so as to have an optical axis, and attachment means extending generally radially outwardly from said lens portion at spaced positions about its periphery for engaging parts of the capsular bag surrounding said opening so as to secure said lens portion in the opening, said attachment means including, at at least one position about said periphery, two cooperating members which extend generally radially outwardly and are axially separatable for receiving and securing therebetween a part of the capsular bag surrounding said opening, such that the respective members bear against inner and outer surface portions of said capsular bag to assist in securing said lens portion in position in said opening, the cooperating surface portions of said members being so closely spaced in the normal condition of said members as to require separation of the members to receive a part of the capsular bag surrounding said opening, and so as to secure between them a part of the capsular bag when the members move back toward their normal condition, such that the members assist in securing said lens portion independently of the iris.

4,485,499

INTRAOCULAR POSTERIOR CHAMBER LENS

Lawrence D. Castleman, 35138 Old Timber Rd., Farmington Hills, Mich. 48018

Continuation-in-part of Ser. No. 414,184, Sep. 2, 1982, abandoned. This application Sep. 22, 1982, Ser. No. 421,215

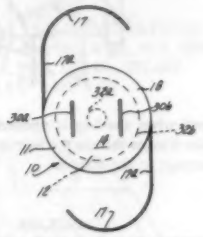
Int. Cl.³ A61F *1/16, 1/24*

U.S. Cl. 3—13 **30 Claims**

1. An intraocular lens for implantation in the posterior chamber of an eye after extracapsular extraction, comprising:

a lens body having a central optical region and a rear face, means comprising lens-centering appendages each having a base portion attached to the lens body for fixating the lens body in operative alignment with the visual axis of the eye, and

chamber-roof profile defining means including rigid roof support members comprising parallel spaced ridge means that are substantially parallel with the base portion of the lens-centering appendages, of predetermined dimension integral with the rear face at diametrically opposed points with respect to a selected portion of the optical region, adapted when the lens is fixated to contact the posterior



capsule at support surfaces coninciding with the roof profile and to thereby provide a capsule-covered protected open zone overlying the rear face throughout the selected portion of the central optical region, the dimensions and spacing of the support members being such as to avoid blocking of the visual axis and sagging of the capsule into the open zone between the rear face and the thus supported capsule and to thereby enable non-invasive post-operative laser surgery in said open zone.

4,485,500

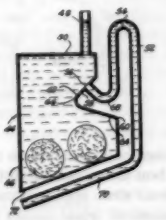
GAS BINDING RESISTANT CHEMICAL DISPENSER

Douglas F. Melville, Jr., Norwood, Mass., assignor to Knomark, Inc., Jamaica, N.Y.

Filed Jan. 6, 1983, Ser. No. 456,032

Int. Cl.³ E03D *9/02*

U.S. Cl. 4—228 **10 Claims**



1. A chemical dispenser adapted to dispense a predetermined volume of a chemical solution into a body of liquid in which said dispenser is immersed in response to the level of said body of liquid being lowered from a first elevation to a second elevation, said dispenser comprising:

(a) a container holding both a quantity of a chemical in solid form and a chemical solution formed therefrom;

(b) an air vent in fluid communication with the upper portion of said container, said air vent extending upwardly and terminating above the top of said container;

(c) a siphon in fluid communication with said container for conveying a volume of said chemical solution from said container into said body of liquid in which said dispenser is immersed, said siphon commencing at an entry port in said container and extending therefrom to a point above the top of said container but below the top of said air vent and thereafter turning in a downward direction as a result

of an inverted U-shaped bend therein to terminate at a point below said entry port in said container; and

(d) an entry port for said siphon a deflection means, said entry port and deflection means being located in a side wall of said container below the top of said container and above said solid chemical and being so disposed that said deflection means will direct the path of rising gas bubbles in the solution surrounding said solid chemical away from said entry port;

whereby said siphon delivers a volume of chemical solution to said body of liquid in response to the level of said body of liquid being lowered from a first elevation to a second elevation and delivers a substantially equal volume of liquid from said body of liquid through said siphon to said container when said body of liquid is raised from said second elevation to said first elevation.

4,485,501

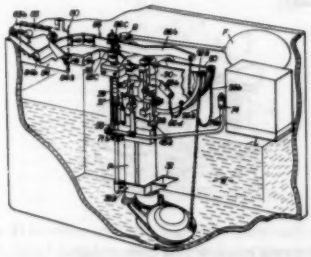
WATER SAVING FLUSH TANK MECHANISM

Irving I. Kloner, 2484 Prairie Ave., Miami Beach, Fla. 33140

Filed May 2, 1983, Ser. No. 490,445

Int. Cl.³ E03D *1/14, 3/12*

U.S. Cl. 4—324 **14 Claims**



1. In a toilet flush tank having an overflow tube, a valve seat associated with said tube through which water from the tank discharges into the toilet bowl, a flapper valve for said valve seat, and a ballcock valve and float for maintaining the water in said tank at a full level; a selective flush mechanism comprising a first operating means opening said flapper valve to initiate discharge of a full tank of water, a second operating means opening said flapper valve to initiate discharge of a fractional portion of said tank of water indicated by a drop in the level of water from the full tank level to a predetermined lower level, a handle having means for selectively actuating either said first or second operating means, water level responsive means normally locked in a full tank level position, a spring loaded striker for applying a rapid downward, valve closing thrust to said flapper valve when the latter is in an open position, loading means for said striker operated by said second operating means, and means releasing said water level responsive means substantially simultaneously with the opening of said flapper valve by said second operating means when the latter is actuated by said handle means, said released water level responsive means coacting to release said striker and initiate said valve closing thrust when the water level in the tank drops to said predetermined lower level.

4,485,502

PORTABLE BATHING TUB FOR INVALIDS

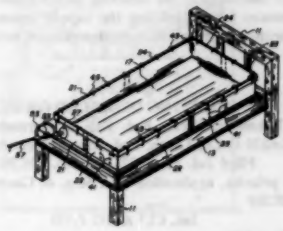
Louis Marcanio, 96 Queens Lane, Rochester, N.Y. 14617

Filed Sep. 20, 1982, Ser. No. 420,279

Int. Cl.³ A47K *3/06*

U.S. Cl. 4—585 **5 Claims**

1. Bathing equipment for use especially by a bedridden person situated on a flat surface, said equipment comprising a large waterproof sheet of sufficient size so that part of the sheet may be placed on part of the surface area of a bed or the like when a person rolls to another part of the area and another part of the sheet may then be extended over a further surface area of the bed when the person rolls onto the previously placed part of the sheet, four portable frame members each L-shaped in plan and arranged for easy assembly and dis-assembly on the bed to form, when assembled, a rectangular enclosure of low upright walls surrounding the person on the waterproof sheet and arranged with one leg of each L-shaped member extending along one side of said said enclosure and the other leg of each L-shaped member extending along part of one end of said



enclosure and with each leg of each member overlapping one leg of an adjacent member, detachable means for securing the legs of different members to each other where they overlap, said upright walls when assembled being substantially continuous and unbroken throughout their height, said sheet being of such size that the marginal portions thereof may extend up the inner surfaces of said walls to the top edges thereof, and means for holding said sheet in position on said walls to form a shallow tub to hold water for bathing the person resting on the sheet within said walls.

4,485,503

AUTOMATIC FOOT WASHING APPARATUS

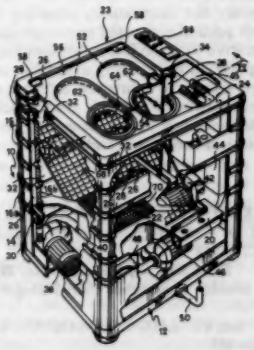
Walter Rolando, Via Marisetto 31, Vinovo (Torino); Asco Da Giau, Via Puccini 3, and Mario Zogno, Via Mascagni 10, both of Pianezza (Torino), all of Italy

Filed Jul. 8, 1983, Ser. No. 512,197

Claims priority, application Italy, May 20, 1983, 53345/83[U]

Int. Cl.³ A47K *3/022;* **A61H** *35/00;* **E03C** *1/00*

U.S. Cl. 4—622 **25 Claims**



1. Automatic foot washing apparatus comprising a bath vessel having a bottom and four side walls delimiting a washing chamber and an upper wall defining two adjacent apertures; respective annular seals fitted to said apertures for sealingly surrounding a user's legs in use; a removable cover with two elongate holes; a respective substantially semi-circular seal

fitted to the edge of each hole at one end thereof; a plate pivoted to the cover and defining two recesses at one end, and respective substantially semi-circular seals which are fitted to the edges of the recesses, said plate being displaceable between a raised position in which it allows the introduction of the user's feet through the elongate holes, and a lowered position in which it partially covers the elongate holes and the semi-circular seals fitted to the edges of the recesses face the semi-circular seals at the ends of the elongate holes; spray means associated with at least one of the walls of the bath; washing means for supplying a washing liquid to the spray means; discharge means for discharging the washing liquid from the bath, and control means for controlling the supply means and the discharge means according to a predetermined automatic cycle.

4,485,504

DEVICE FOR CARRYING DISABLED OR SICK PERSONS

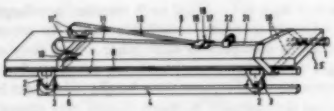
J. C. L. Lehmann, Lorch, Fed. Rep. of Germany, assignor to Binz GmbH U Co, Lorch, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,393

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1981, 8125289

Int. Cl.³ A61G *1/00*

U.S. Cl. 5—82 R **15 Claims**



1. A stretcher device for carrying disabled or sick persons provided with a carrying platform adapted to be installed in transportation means, comprising a rigid frame; and a saftey belt system connected to said frame for fastening a patient to said frame, said belt system including a first belt portion to be extended over the shoulders and an upper part of a patient body, a second belt portion to be extended over the legs of a patient, a transverse belt portion to be extend under a patient, said first belt portion being of V-shape and being connectable to said transverse belt portion, lock means for connecting said first belt portion and said second belt portion to each other, said lock means including a snap closure having a first part connected to said first belt portion and a second part connected to said second belt portion, said second part of the lock means being releasably-arrestable in said first part, and means for independently and automaticaly adjusting the length of said second belt portion connected to said second belt portion and being operative by a forcible movement imparted to said second belt portion for resiliently expanding or contracting said second belt portion in a direction to a feet end of said frame, said second portion of said belt system including a belt loop and an additional belt portion extending between said second part of said lock means and said loop.

4,485,505

VENTILATING, INFLATABLE MATTRESS

Patrick R. D. Paul, 916 Stillwater Dr., James Island, Charleston, S.C. 29412

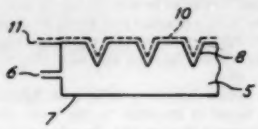
Filed Aug. 10, 1981, Ser. No. 291,168

Claims priority, application United Kingdom, Aug. 13, 1980, 8026381

Int. Cl.³ A61G *7/04*; A47C *27/18, 27/10*

U.S. Cl. 5—453 **13 Claims**

1. A mattress unit comprising a hollow inflatible base support having a plurality of resilient upstanding support cells arranged on the upper surface of the base support, the tops of the cells being adapted to support a human body such that depression of one cell by weight of the human body will not depress adjacent uncontacted cells, thus avoiding substantial horizontal forces against the human body, the support cells being covered by a cover defining a gap between the support cells and the cover, said cover having a like configuration as



said upper surface of said base support, and an inlet to allow gas under pressure to said gap, the cover being perforated to allow gas to escape upwardly.

4,485,506

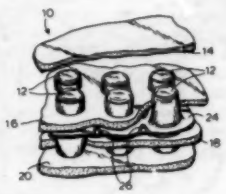
COIL SPRING CONSTRUCTION

Walter Stumpf, and Paul J. Dillion, both of Dunwoody, Ga., assignors to Simmons U.S.A. Corporation, Atlanta, Ga.

Filed Apr. 7, 1983, Ser. No. 482,759

Int. Cl.³ A47C *27/05, 27/07*; F16F *3/10*

U.S. Cl. 5—477 **8 Claims**



1. A coil spring construction comprising:

a fabric layer defined by interconnected top and bottom sheets and defining a plane;

a plurality of spring pockets defined by said top and bottom sheets and extending substantially perpendicularly from said plane;

at least one spring positioned within each of said spring pockets and maintaining said spring pockets taut;

said spring pockets being separated from each other by planar portions of said fabric layer thereby allowing said springs to act independently from one another during compression or expansion; and

stabilizing means including a resilient layer having a plurality of holes therein, said spring pockets each extending at least partially within one of said holes and being maintained in said substantially perpendicular positions with respect to said plane;

said spring pockets extending both above and below said plane, said stabilizing means including first and second resilient layers each having a plurality of holes therein, said holes in said first resilient layer receiving portions of said spring pockets extending from one side of said plane and said holes in said second resilient layer receiving portions of said spring pockets extending from the other side of said plane.

4,485,507

COMBINATION SCISSOR HAMMER TOOL

Karl-Heinz Kantwerk, Krebsmuehlenring 92, 8631 Ahorn-Schorkendorf, Fed. Rep. of Germany

Filed Aug. 2, 1983, Ser. No. 519,604

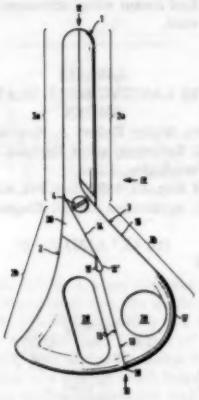
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1983, 3325602

Int. Cl.³ B26B *13/22*

U.S. Cl. 7—135 **14 Claims**

1. A combination tool comprising two pivotally connected

levers pivoted between an open position and a closed position, each of said levers having a first section cooperable with one another to form a scissors, one of said first sections having a cutting edge and the other of said first sections having a longitudinal opening to receive said cutting edge, said other first section having a generally U-shaped cross-sectional configuration defined by two inner leg-walls, one of said leg-walls being longer than the other leg-wall, said shorter leg-wall having a terminating end wall, said one first section having a first, second, and third wall portion, said first wall portion being slidably cooperable with said one leg-wall to effect a scissor-like action when said two levers are pivoted between said open and closed positions, said second wall portion being disposed



within the U between said two leg-walls when said two levers are in said closed position, said third wall portion engaging said terminating end wall when said two levers are in said closed position, whereby when said two levers are in said closed position, said two levers together cooperate to define a longitudinal extending outer uninterrupted smooth surface functional as a hammer handle, each of said levers having a second section defining scissor handles adapted to be manually engaged to pivot said two levers between said open and closed position, said second sections defining a hammer head, said hammer handle being adapted to be manually grasped to use said combination tool has a hammer when said two levers are in said closed position.

4,485,508

METHOD AND APPARATUS FOR DYEING OF TEXTILE MATERIAL

Billy J. Otting, LaFayette, Ga., assignor to Otting International, Inc., Lafayette, Ga.

Continuation-in-part of Ser. No. 391,468, Jun. 23, 1982,. This application Feb. 25, 1983, Ser. No. 469,643

Int. Cl.³ D06B *1/02*

U.S. Cl. 8—151 **17 Claims**

1. A method of treating a continuously moving textile web, the steps comprising:

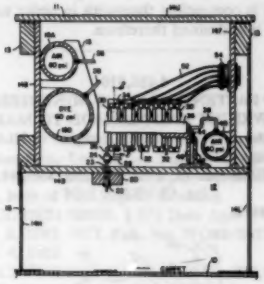
(a) conveying the web past at least one treating station; and

(b) mixing gas and treating liquid in a plurality of separate mixing chambers disposed at said at least one treating station to create a fine foam spray applied directly onto the web through a plurality of spray nozzles disposed at said at least one treating station and corresponding on a one-to-one basis with said plurality of mixing chambers, each spray nozzle spraying the foam from the corresponding one of said mixing chambers.

9. Apparatus for treating a continuously moving textile web comprising:

(a) a plurality of liquid valves;

(b) a plurality of mixing chambers corresponding on a one-to-one basis with said plurality of liquid valves, each mixing chamber having a first input connected to a gas pressure source and a second input connected to the corresponding one of said liquid valves for receiving gas and liquid, respectively, and for mixing gas and liquid to create a foam,



(c) a plurality of nozzles for spraying said foam from a corresponding one of said mixing chambers onto a textile web, and

(d) reciprocating means for causing said nozzles to reciprocate.

4,485,509

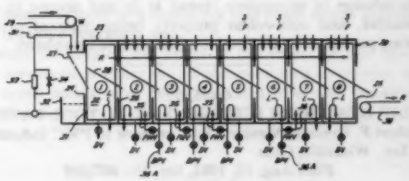
CONTINUOUS BATCH TYPE WASHING MACHINE AND METHOD FOR OPERATING SAME

Norvin L. Pellerin, New Orleans; James M. Katzfey, Kenner, and Daniel P. Garcia, Jefferson, all of La., assignors to Pellerin Milnor Corporation, Kenner, La.

Continuation of Ser. No. 441,298, Nov. 12, 1982, abandoned, which is a continuation of Ser. No. 251,041, Apr. 17, 1981, abandoned. This application Aug. 10, 1983, Ser. No. 521,882

Int. Cl.³ D06F *31/00*

U.S. Cl. 8—158 **24 Claims**



1. In a continuous batch type washing machine having a succession of drums each of which is rotatable within a bath of liquor contained within an individual compartment of a succession of compartments during each washing cycle, and wherein means are provided for transferring cloth goods from each drum into the next successive drum intermediate wash cycles, and liquor is caused to circulate through each drum compartment and from at least one drum compartment to an adjacent drum compartment of a pair of successive drum compartments, while being maintained at a desired level therein, during each washing cycle, the improvement comprising means operable at the beginning of each wash cycle, and in response to the incompatibility of the liquor in the one drum compartment with the goods in the adjacent drum compartment, for interrupting the circulation of liquor from said one into said adjacent drum compartment and diverting it elsewhere, and for replacing the liquor which said adjacent drum compartment was to receive from said one drum compartment with liquor compatible with

the goods in said adjacent drum compartment, and means operable at the end of each wash cycle, and in response to the incompatibility of liquor within the drum compartment into which the cloth goods are to be transferred from the preceding drum compartment of said pair of compartments upon completion of said wash cycle, for draining said liquor therefrom, and at the beginning of the next wash cycle, adding liquor to the drum compartment into which said goods have been transferred which is compatible therewith in order to replace the liquor which was drained therefrom.

4,485,510

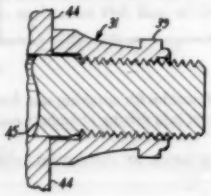
THREADED FASTENER HAVING MINIMIZED LENGTH AND WEIGHT AND METHOD TO MAKE IT

Edwin E. Hatter, Torrance, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

Filed Jan. 11, 1982, Ser. No. 338,249

Int. Cl.³ B21N *3/08*

U.S. Cl. 10—10 R **6 Claims**



1. The method of making a pin made of work hardenable metal having a cylindrical shank, a headed end and a threaded end on said shank, and minimizing the length of said threaded end by minimizing the amount of incomplete thread thereon, said method comprising: fabricating a peripheral groove in said pin next to said shank, said groove having a shoulder contiguous to said shank and a radius contiguous to said shoulder at the bottom of said groove, rolling at least said radius to work-harden the metal at that region, and fabricating a thread on the threaded end on the opposite side of said shoulder from said shank, said thread extending into near-adjacency to said shoulder and having no more than approximately one-half of a convolution of incomplete thread at its end nearest to said shoulder, said cold-rolled property being inherent in said rolled portion after fabrication of said pin is completed.

4,485,511

DIE HEAD WITH DIFFERENT AXIAL TOOL PATHS

Robert F. Urbanic, Mentor, Ohio, assignor to PMC Industries, Inc., Wickliffe, Ohio

Filed Aug. 11, 1982, Ser. No. 407,085

Int. Cl.³ B23G *1/00*

U.S. Cl. 10—96 T **30 Claims**

1. A rotary die head comprising a rotating body having a bore with central axis that is coaxial with the axis of a workpiece being threaded thereby during relative axial movement therebetween, at least two circumferentially spaced guide slots in said body, said guide slots having radial components of orientation but different axial components of orientation relative to said body, at least first and second carrier blocks respectively received in said guide slots, means for selectively simultaneously reciprocating said carrier blocks in said guide slots, first and second tool means respectively carried by said reciprocating first and second carrier blocks for advancement toward and retraction away from said workpiece while said body is rotating, said first tool means when advanced forming one flank of a thread, said second tool means when advanced simultaneously forming the other flank of the thread and said first and second tool means when advanced commonly generating the thread root.

4,485,512

MACHINES FOR LASTING HEEL SEAT PORTIONS OF SHOES

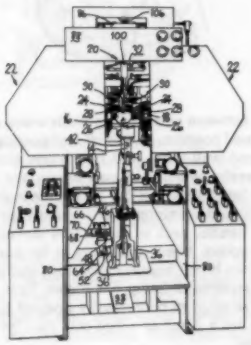
James R. Flanders, Blaby; Robert A. Newton, Cosby, and William H. Berrill, Leicester, all of England, assignors to USM Corporation, Farmington, Conn.

Filed Aug. 30, 1982, Ser. No. 412,846

Claims priority, application United Kingdom, Aug. 28, 1981, 8126399

Int. Cl.³ A43D *21/00*

U.S. Cl. 12—12.5 **12 Claims**



1. A machine for lasting heel seat portions of shoes comprising:

a shoe support, for supporting a shoe comprising an upper and an insole carried on a last,

a support head on which are mounted a heel band,

a holddown and heel seat lasting intrumentalities comprising:

two wiper plates, means for effecting relative movement of approach between the shoe support and the support head to bring them to an operative relationship determined by engagement of the heel end of a shoe supported by the shoe support with the heel band, the shoe thus being located in a lengthwise direction relative to the heel seat lasting instrumentalities and to the holddown, and means for effecting relative heightwise movement between the shoe support and the holddown, whereby to locate the heel seat region of the shoe bottom in a heightwise direction relative to the plane of the wiper plates of said instrumentalities, wherein means is provided, operable when the shoe support and support head are in their operative relationship, for effecting relative movement of separation between the shoe support and heel band through a predetermined distance to disengage the heel end of the shoe from the heel band, the relative heightwise movement between the shoe support and the holddown taking place

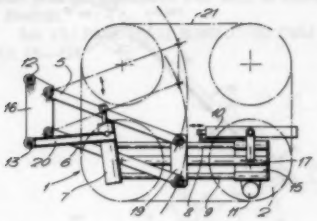
while the heel end of the shoe and heel band are thus disengaged, whereafter return movement is caused to take place between the shoe support and the heel band to return the heel end of the shoe into engagement with the heel band.

4,485,513

WASHING MACHINE FOR A WASTE CONTAINER

Kalevi Eskelinen, Vihtavuori, Finland, assignor to Vihta-Auto ja Kone Oy, Vihtavuori, Finland

Filed Mar. 17, 1983, Ser. No. 476,206
Claims priority, application Finland, Mar. 17, 1982, 820910
Int. Cl.³ A47L *25/00*; A46B *13/04*
U.S. Cl. 15—56 **13 Claims**



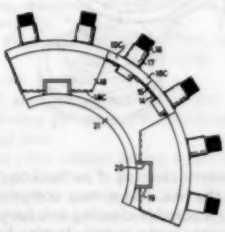
1. A washing machine for a waste container or for any other container of a relatively large size, the washing machine being designed so as to be attached preferably to a vehicle, such as a lorry, for example as a unit with a frame of an exchangeable platform, the washing machine comprises at least one rotatable brush, which consists of a tubular brush body, from which the brush fibers project preferably radially, and of nozzle means for spraying the washing liquid onto the object to be washed, wherein, the brush is moved along a path of movement substantially of a shape of a rectangle or square in a plane perpendicular to the axis of rotation of the brush, the washing machine comprises a first guide means and a first drive element for moving the brush in a plane perpendicular to the axis in a first direction, the washing machine additionally comprises a set of horizontal guide means and a second drive element for moving the brush in a plane perpendicular to the axis back and forth in a second direction perpendicular to the first direction.

4,485,514

BRUSH RING FOR CLEANSING MACHINES

Walter Droeser, Ragnaröksgatan 7, S-723 55 Västerås, Sweden

Filed Oct. 25, 1983, Ser. No. 545,344
Int. Cl.³ A46B *3/16, 7/10*
U.S. Cl. 15—179 **1 Claim**



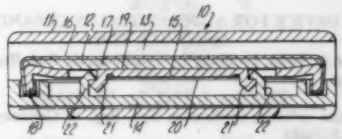
1. A brush ring for roller brushes in cleaning machines, comprising a ring having a U-shaped cross section defined by radially extending annular flanges at each side of the ring, the ring having a plurality of uniformly spaced openings therethrough disposed between the flanges, each opening having an upstanding wall thereabout, a bristle bundle of hairpin configuration in each hole with the bend of the hairpin extending through the hole to the radially inner side of the ring, and an annular wire passing through the bends of all the bundles to retain the bundles in position against centrifugal force.

4,485,515

CLEANING BRUSH

Leonhard Hagedorn, Lohrheimer Strasse 10, D-6251 Niederneisen, and Rolf-Günter Schülein, Gartenstrasse 13, D-5409 Singhofen, both of Fed. Rep. of Germany

PCT No. PCT/DE81/00119, § 371 Date Apr. 8, 1982, § 102(e) Date Apr. 8, 1982, PCT Pub. No. WO82/00577, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 6, 1981, Ser. No. 375,133
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1980, 3030394
Int. Cl.³ A46B *17/04*
U.S. Cl. 15—184 **11 Claims**



1. A cleaning brush for brushing clothing comprising:

a brush means;

means for circumferentially bounding an elongated passage at least partially receiving said brush means and having longitudinally spaced open ends to allow said brush means to be slid into and out of said bounding means through either one of said open ends thereof for the bounding means to serve as a handle for said brush means during a brushing operation; and

means for limiting the extent of movement of said brush means out of either one of said open ends to prevent the brush means from being separated from said bounding means.

4,485,516

LAWN MOWER SCRAPER

Philip A. Crook, 44 Sandalwood Ave., Hamilton, Ontario, Canada L8T 2E3

Filed Oct. 28, 1982, Ser. No. 437,223
Int. Cl.³ A47L *13/08*
U.S. Cl. 15—236 R **8 Claims**

1. A scraper for use with a mower having a cutting element rotating about a vertical axis within a housing, said scraper comprising a handle, and a blade element extending from said handle, said blade element comprising first and second portions connected to one another and disposed substantially at right angles to one another, said blade element having a pair of

opposed edges extending along the length of the blade element for engagement with said housing to remove debris therefrom

with the blade element being concave between said edges to present said edges at an angle to said housing.

4,485,517

DEVICE FOR AUTOMATICALLY CLEANING MANHOLE RIMS

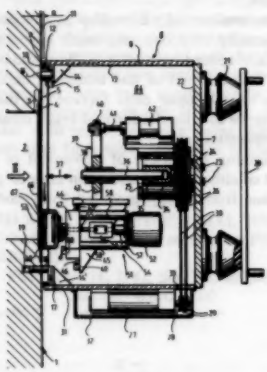
Lothar A. Voigt, Im Haag 2, 7148 Remseck, Fed. Rep. of Germany

Filed Sep. 7, 1982, Ser. No. 415,450

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1981, 3135454

Int. Cl.³ A46B *13/02*

U.S. Cl. 15—246.5 **15 Claims**



1. A device for automatically cleaning the rim of a circular aperture on a container wall, comprising:

a housing juxtaposable with said container wall and alignable with said aperture;

a support in said housing rotatable about the axis of said aperture;

surface-cleansing means eccentrically disposed on said support for engagement with the rim of said aperture, said surface-cleansing means including a rotary scrubber with a shaft parallel to said axis, said support being provided with adjustable mounting means carrying said surface-cleansing means, said mounting means comprising an axially shiftable holder and a slider radially displaceable on said holder, said shaft being journaled in said slider;

a first motor coupled with said support for rotating said surface-cleansing means about said axis; and

a second motor coupled with said shaft for rotation of said scrubber independent of the motion of said support.

4,485,518

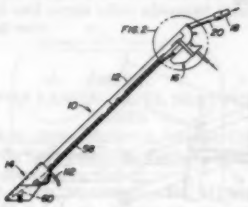
WET-DRY VACUUM CLEANING APPARATUS

Gary A. Kasper, Cadillac, Mich., assignor to Rexair, Inc., Troy, Mich.

Filed Jul. 1, 1983, Ser. No. 510,019

Int. Cl.³ A47L *7/00, 11/34*

U.S. Cl. 15—322 **12 Claims**



1. Wet-dry vacuum cleaning apparatus comprising a hollow vacuum tube having a head at one end, a discharge nozzle supported by said head, an assembly attached to said tube, said assembly including a valve having an inlet conduit and a container, an outlet on said valve being connected to said nozzle, means for causing liquid to flow into said inlet conduit from said container for mixing with water upstream of said valve, and means for selectively permitting water to flow from said conduit into said container while said container is supported by said assembly.

4,485,519

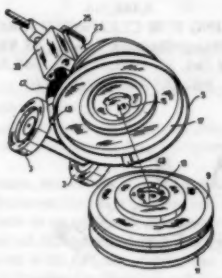
OZONE CLEANING SYSTEM

David S. Collier, Mississauga, Canada, assignor to Carpet Clinic Ltd., Toronto, Canada

Filed May 24, 1982, Ser. No. 381,380

Int. Cl.³ A47L *5/34*

U.S. Cl. 15—359 **9 Claims**



1. A system for ozone cleaning of surfaces on carpets, furniture, drapery and the like, said system comprising an ozone producing unit and a portable cleaning unit having a cleaning head, at least one ozone outlet at said cleaning head, an ozone passage from said ozone producing unit, a blower for blowing ozone along said ozone passage, said ozone producing unit being sealed to prevent escape of ozone therefrom other than from said ozone passage and said at least one ozone outlet directing the ozone under pressure from said blower past said cleaning head at the contaminated surface, and a shroud open-

ing downwardly around said cleaning head and adapted to ride along the surface for maintaining a downward pressurized penetration of the ozone directly into the surface while substantially preventing escape of the ozone other than at the surface for maximizing the cleaning thereof.

4,485,520

FOAMED RUBBER ERASERS AND PROCESS FOR THE PRODUCTION THEREOF

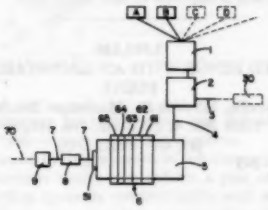
Werner Handl, Altdorf, and Rupert Englbrecht, Burghausen, both of Fed. Rep. of Germany, assignors to Firma J. S. Staedtler, Fed. Rep. of Germany

Filed Nov. 3, 1980, Ser. No. 203,359

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1979, 2944503

Int. Cl.³ B43L *19/00*; B29D *27/00*; C08J *9/30*

U.S. Cl. 15—424 **22 Claims**



1. A proces for producing a shaped foamed eraser material having a uniformly porous structure with a gas uniformly distributed therein, the steps consisting essentially of:

(a) forming a dispersed plastisol of polyvinly chloride or polyvinylchloride/polyvinylacetate;

(b) foaming said plastisol in a foamer mixer by introducing gas into the plastisol during said foaming to obtain a uniform distribution of gas throughout the gas admixted plastisol;

(c) shaping the gas admixed plastisol;

(d) gelling the shaped gas admixed plastisol to form a shaped foamed eraser material by subjecting the gas admixed plastisol to at least one heating zone where the maximum temperature is below the temperature whereby the gelled admixture becomes completely solidified.

4,485,521

SHOCK ABSORBING CASTER PROVIDED WITH AN ELASTOMERIC MEMBER TO PREVENT WATER COLLECTION THEREIN

John H. Welsch, Moscow, Pa., and Bernard D. McLean, Springfield, Mass., assignors to Metropolitan Wire Corporation, Wilkes-Barre, Pa.

Filed Jun. 21, 1982, Ser. No. 390,531

Int. Cl.³ B60B *33/00*

U.S. Cl. 16—44 **9 Claims**

1. A shock absorbing caster comprising:

a wheel having an opening therethrough to define a first rotational axis;

a U-shaped yoke member having a pair of legs separated by a bight portion;

coupling means at said first rotational axis for rotationally coupling said wheel between said legs;

a cap member sitting over said yoke member;

pivot means securing said cap member to said yoke member to permit rotational movement therebetween about a second rotational axis;

elastomeric means positioned between said yoke member and said cap member for resiliently cushioning said rotational movement about said second rotational axis;

said elastomeric means including a substantially rectangular elastomeric body portion having a lower surface;

said lower surface juxtaposed to said yoke bight portion on both sides of said pivot means for resiliently cushioning said rotational movement about said second rotational axis;

said elastomeric body portion including open means to allow cleaning thereof and to prevent collection of water therein, said open means including an upper surface on said elastomeric body portion with a first portion of said upper surface being at a lower planar level than a second portion of said upper surface, said first portion being vertically spaced from said cap member to provide an opening for the cleaning and prevention of water collec-

tion, said first portion having a slight vertical pitch to allow washing water to drain therefrom;

said second portion of said upper surface being disposed so as to abut against said cap member and said yoke member upon rotation in one direction about said second rotational axis, thereby to limit amount of said rotational movement about said second rotational axis;

stop means for securing said elastomeric body portion to said cap member to retain said elastomeric body portion in position; and

said stop means limiting the amount of rotational movement in one direction about said second rotational axis and also acting to maintain said vertical spacing between said cap member and said first portion of said upper surface of said elastomeric member.

4,485,522

DOOR-CLOSING HINGE HAVING A SPRING AND PIN MECHANISM

Youn-Long Chen, No. 182, Kae Shyuan 2nd Rd., Kaohsiung, Taiwan 800

Filed Aug. 31, 1982, Ser. No. 413,494

Int. Cl.³ E05F *3/20*

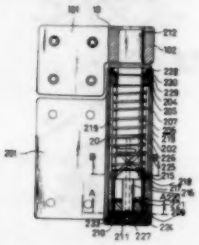
U.S. Cl. 16—54 **7 Claims**

1. A self-resetting, automatic hinge, comprising: a sleeving compartment complete with a sleeving and a fix plate annexed thereto, the sleeving having a square entry port, a cylinder column, complete with a hollow cylinder and a fix plate annexed thereto and a longitudinal guidance groove on an internal surface thereof, serving to set in transmission elements including:

a transmission lever, a top of said lever having a substantially square stem, with an annular washer provided underneath the substantially square stem and bearing further down, the bearing being engaged into a concave ring provided in a middle of a screw collar provided on the transmission lever in a manner to project a little over the surface of the screw collar and to adhere tightly to the bottom of the

annular washer so as to serve to avoid frictional drag on the transmission lever in rotation, on top of the transmission lever there is furthermore provided a ring groove alongside an outer rim thereof, to be reinforced by facilitating holding thereof by the sleeve of a bumper to be provided otherwise, an underside of an annular ring being formed into a round stem with a two-way helical groove provided over an outer surface above the bottom of said round stem, an extension thereof being executed into a smaller concentric stem, a middle portion of the round stem that is part of the transmission lever being furnished with a small round hole that serves to provide for a passage along the hollow interior of the transmission lever;

a sliding sleeve, complete with one set of inner and outer pins projecting from an internal surface and outer surface thereof respectively, the bottom of said sliding sleeve is further provided with a round hole and two relatively smaller holes; the sliding sleeve being incorporated to the transmission lever complete with inner pins for sliding coupling to a two-way helical groove whereas an outer



pin is to be engaged to the guidance groove provided on the inner surface of the cylinder, such that the round hole at the bottom of the sliding sleeve will allow penetration thereinto by a smaller round stem provided on the transmission lever;

a piston, attached to the bottom of the sliding sleeve and having a round hole and two relatively smaller holes of the same dimension as those provided at the bottom of the sliding sleeve aligned therewith being fastened with screws;

an oil-proofing ring, made of rubber and bonded with an iron piece underneath, to be secured to the position of the round stem as provided below the substantially square stem provided as a part of the transmission lever to enhance security from displacement;

a spring, disposed around the transmission lever and lying between the oil-proofing ring and the sliding sleeve; and

a threaded adjusting bolt, a tip of which is conical, serving to adjust and restrict an aperture port provided at the terminal end of the transmission lever.

4,485,523

RV DRAPERY MOUNT AND LIGHT FIXTURE

Bob J. Higgins, Elkhart, Ind., assignor to Trans-Aire International, Inc., Elkhart, Ind.

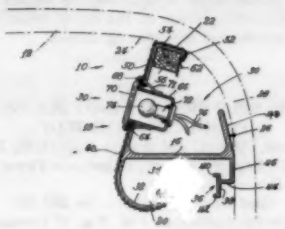
Filed May 17, 1982, Ser. No. 379,119

Int. Cl.³ E05D *11/00, 13/02*

U.S. Cl. 16—94 D **10 Claims**

1. A drapery mount having front and side walls for a recreational vehicle having a ceiling and a side wall, which comprises:

an extrusion having a base portion having at the side wall thereof, a wall-abutting portion and, at the front wall thereof, non-symmetrical upper and lower portions which respectively, are above and below said base portion characterized in that said base portion and said upper portion are shaped to form with the ceiling and wall of the recreational vehicle an essentially closed channel and the lower portion is shaped to form an open channel, said open channel having a front portion which comprises a fabric cover beading receptor which is an integral part of said



lower portion and a back portion which comprises a drapery hanger track which is mounted on said wall-abutting portion and is opposed to said receptor.

4,485,524

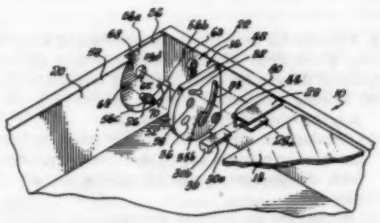
RECESSED HINGE WITH AN ADJUSTABLE PIVOT POINT

Donald G. Neville, 315 34th St., Manhattan Beach, Calif. 90266

Filed Jun. 4, 1982, Ser. No. 385,099

Int. Cl.³ E05D *7/06*

U.S. Cl. 16—241 **25 Claims**



1. A hinge for a cover for an opening in an enclosure, comprising:

a hinge body having first and second slots therein, and rotatably mounted to such enclosure;

a friction member disposed within the first slot and in frictional engagement with a portion of the hinge body defining the perimeter of said first slot;

means for holding the cover;

a pair of pin means coupling the cover holding means to the hinge body, one of said pin means being coupled to the friction member and the other being disposed within the second slot; and

leveling means including an eccentric cam mounted to rotate the hinge body relative to the enclosure.

4,485,525

DEVICE FOR ALIGNING FISH WITH REGARD TO THE POSITION OF THEIR PLANE OF SYMMETRY

Günter Behnk, Reinfeld; Herbert Köhn, Bad Schwartau, and Günther Pinkerneil, Lübeck, all of Fed. Rep. of Germany, assignors to Nordischer Maschinenbau Rud. Baader GmbH & CO KG, Lübeck, Fed. Rep. of Germany

Filed Aug. 12, 1982, Ser. No. 407,335

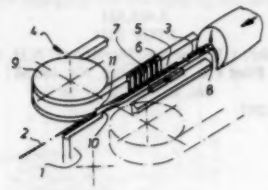
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132864

Int. Cl.³ A22C *25/08*

U.S. Cl. 17—55 **3 Claims**

1. A device for aligning fish, said fish defining a cross-section approximating circular shape and a plane of symmetry, and having a head and a tail part as well as flanks, a back and an

abdomen forming an abdominal cavity, all intermediate said head and said tail part, said flanks ending in a belly seam extending along the outside of said abdomen and including a vent fin in the region of the end of said abdominal cavity facing said tail part, said abdominal cavity having been opened by a strip cut extending at least behind said vent fin almost perpendicular to said plane of symmetry and equidistant to said belly seam, said device conveying said fish with said head leading in a conveying direction along a fish path, aligning said fish with regard to the position of said plane of symmetry, preparing said tail part for an aligned guiding of said fish during their handling in a fish-processing machine, including processing tools, and comprising



(a) conveying means for transporting said fish along said processing tools of said processing machine,

(b) a saddle-shaped guiding element which supports said fish in said abdominal cavity and defines a pair of support edges extending upwards symmetrically with respect to said plane of symmetry, and being designed as knife means along at least part of the length of said support edges, said knife means defining cutting edge means ascending in said conveying direction to extend into said fish path and being positioned to cut parallel incisions in the belly side of the tail part of the fish as said fish is transported by said conveying means along said knife means, and

(c) spring-biassed hold down means situated in the region opposite said knives.

4,485,526

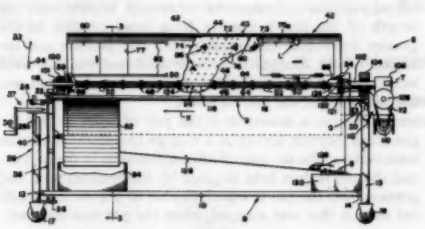
FISH SCALING APPARATUS

Walter W. Opanasenko, 486 2nd St., Bay Port, Mich. 48720

Filed Aug. 9, 1982, Ser. No. 406,299

Int. Cl.³ A22C *25/02*

U.S. Cl. 17—64 **23 Claims**



1. Fish-scaling apparatus comprising:

a frame;

a hollow elongate fish-scaling drum, rotatably mounted on said frame, including a fish supply upstream end for receiving unscaled fish and a fish discharge downstream end for discharging scaled fish;

means for rotating said fish-scaling drum, thereby causing the fish disposed therein to upwardly rotate therewith until the force of gravity interrupts such movement whereby the fish tumble downwardly and move axially downstream;

said drum including axially-spaced abrasive portions separated by relatively non-abrasive portions, whereby the scales of the fish will be intermittently abraded by the abrasive portions as the fish move axially downstream to remove the scales; and

a plurality of circumferentially and axially spaced wedge members projecting radially inwardly from said drum for reorienting the fish.

4,485,527

FILLETING BOARD

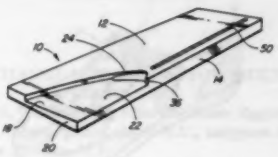
Weis A. Stachowiak, Lunenburg, Canada, assignor to Fisheries Resource Development Limited, Dartmouth, Canada

Filed May 5, 1983, Ser. No. 491,816

Claims priority, application Canada, Nov. 1, 1982, 416600

Int. Cl.³ A22C *17/02, 25/00*

U.S. Cl. 17—70 **19 Claims**



1. A fish filleting board including an elongated body having a major top surface, a recess in said top surface defining a floor providing a minor support surface disposed below said major top surface in the operational position of the board and arranged to receive and support the head of a fish in approximate alignment with the spine of the fish after removal of the first fillet therefrom such that the cut portion of the fish body can lie directly on said major top surface with the spine thereof lying parallel to said major top surface, an abrupt step being defined between a portion of said major top surface and the floor of said recess and against which step the cut portion of the fish head may be lodged to stabilize the fish during removal of the second fillet.

4,485,528

METHOD AND APPARATUS FOR DRAFTING FIBER STRANDS

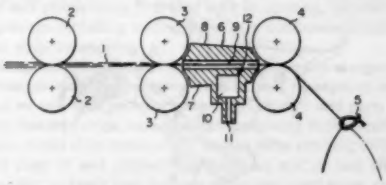
Meiji Anahara, Kariya, and Yoshihisa Suzuki, Chiryu, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Aug. 10, 1982, Ser. No. 406,782

Claims priority, application Japan, Aug. 15, 1981, 56-127994

Int. Cl.³ D06H *3/08*

U.S. Cl. 19—258 **15 Claims**



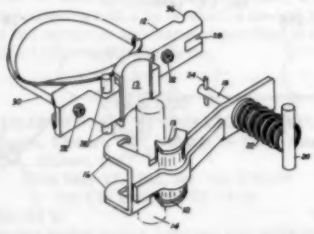
1. An apparatus for drafting fiber strands, which comprises a pair of back rollers and a pair of front rollers, which are arranged separately from each other with a certain distance therebetween in parallel to each other, wherein a fiber strand delivered from the back rollers to the front rollers in the state nipped by the respective pairs of the rollers is drafted by the difference of the peripheral speed between the back rollers and the front rollers, said drafting apparatus being characterized in that a fiber strand guide device having a passage defined by a

tubular inner wall is disposed in the drafting zone and jet means extending laterally across substantially the entire width of said passage for forming a fluid stream inclined toward the running direction of the fiber strand and intersecting the running direction of the fiber strand is arranged on a part of the passage.

4,485,529
REUSABLE TYING DEVICE
Ronald D. Blum, 838 Orchard Rd., SW., Roanoke, Va. 24014
Filed Apr. 8, 1983, Ser. No. 504,942
Int. Cl.³ F16G *11/00*
U.S. Cl. 24—117 **21 Claims**

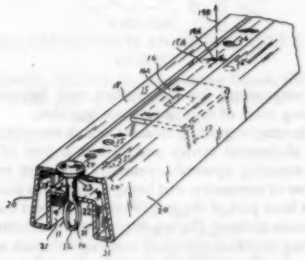
1. A device for securing tied shoe laces comprising:
(a) a body portion
(b) a member extending from said body portion, said member including means for securing said device to shoe laces; and
(c) a closed elastic band fixed to said body portion, said member defining a band hole for receiving said elastic band therethrough, said elastic band being of sufficient dimensions to pass through said hole, over a shoe lace knot, and over said body portion to impede the shoe lace knot from untying.

4,485,530
CONDUIT CASE (CASE 2)
Maxwell G. Begley, Dianella, and Keith Munslow-Davies, Morley, both of Australia, assignors to Kelvin E. Lord & Co., West Perth, Australia
Filed Nov. 16, 1982, Ser. No. 442,164
Claims priority, application Australia, Jun. 23, 1982, PF4558
Int. Cl.³ B65D *63/02*; F16L *3/08*
U.S. Cl. 24—270 **3 Claims**



1. A conduit clamp comprising a pair of jaws and means for securely attaching the clamp to a stable structure, said jaws comprising respective, opposed recesses arranged to abut against sides of a conduit, said jaws comprising means for pivotally connecting them together at a first end, one of said jaws comprising at a second end an aperture and a recess behind the aperture, and the other of said jaws comprising a twist lock means at a second end comprising a pin rotatably mounted in an aperture in said other jaw, provided adjacent one end with a locking lug at one end of the pin, a handle at another end of the pin remote from the locking lug, such that the pin can be inserted endwise in the aperture with the locking lug foremost and the pin can then be axially rotated by means of the handle so as to cause the locking lug to engage behind the said one jaw and be received by the recess to lock the jaws together, a coil spring being mounted about the pin between the handle and the adjacent jaw so as to urge the handle away from the jaws and the locking lug into engagement with the recess in the locking position of the twist lock, such that, to close the jaws and clamp a conduit, the twist lock means is inserted in the aperture and partially, axially rotated.

4,485,531
STOP PIN
Robert Murphy, 1 Timber La., Merrimack, N.H. 03054
Filed Feb. 8, 1983, Ser. No. 463,567
Int. Cl.³ A47B *21/00*
U.S. Cl. 24—297 **8 Claims**



1. A stop pin for use with a circuit element carrier having a pair of aligned spaced holes into which the pin is to be inserted, the pin comprising:
a head portion of greater dimension transverse to the pin axis than the diameter of said pair of holes into which the pin is to be inserted;
a shank portion of uniform diameter not greater than that of the holes of the pair; and
an end portion flared to a greater transverse dimension than the uniform diameter of the shank portion, said end portion being of elongated hollow oval configuration to afford resilient resistance to entry and withdrawal, the length of the shank portion from head portion to the greater transverse dimension of the end portion and the length of the elongated hollow oval end portion each being greater than the outer distance between top and bottom walls at the pair of holes;
whereby the pin is insertable in the pair of holes so that the pin shank portion serves as a stop to longitudinal motion transverse to the pin axis of circuit elements in the carrier, and the pin is then held in place by the resilient oval end portion, and the pin is withdrawable to permit longitudinal motion that was stopped when the pin was inserted.

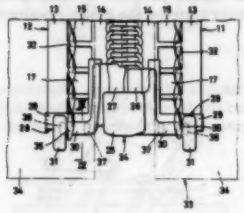
4,485,532
SEPARABLE SLIDE FASTENER
Hiroshi Yoshida; Shunji Akashi, both of Kurobe, and Yoshio Matsuda, Nyuzen, all of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan
Filed Sep. 9, 1981, Ser. No. 300,670
Claims priority, application Japan, Sep. 10, 1980, 55-125840
Int. Cl.³ A44B *19/24*
U.S. Cl. 24—381 **7 Claims**

1. A separable slide fastener comprising:
(a) a pair of warp-knit stringer tapes each including a pair of first and second webs with a wale-free region extending longitudinally therebetween, and a connector thread in-

terconnecting said first and second webs transversely across said wale-free region defining permanent apertures at longitudinal intervals, said connecting thread having a plurality of transverse portions extending across said wale-free region between said first and second webs, said stringer tapes being juxtaposed with said second webs disposed adjacent to each other, said wale-free region being receptive of a chain of thread loops for connecting said stringer tape to a fabric;

(b) a pair of rows of coupling elements each mounted on said second web of one of said stringer tapes remotely from said wale-free region;

(c) a slider movable along said pair of rows of coupling elements for engaging and disengaging the latter;



(d) a separable bottom end stop comprising a box and a box pin extending therefrom, which are mounted on one of said stringer tapes at one end thereof, and a pin mounted on the other stringer tape at one end thereof, and insertable into said box; and

(e) a reinforcement member mounted on each of said stringer tapes at said one end thereof and connected to said separable bottom end stop and extending between said first and second webs across said wale-free region, said reinforcement member including means adjacent to said wale-free region for extending through and thus anchoring an end of the chain of thread loops on said reinforcement member against displacement thereoff.

4,485,533

SLIDE FASTENER CHAIN AND METHOD OF MANUFACTURING THE SAME

Kiyoshi Takeshima, Namerikawa, and Yoshinori Nakada, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 22, 1982, Ser. No. 452,286
Claims priority, application Japan, Dec. 29, 1981, 56-212490
Int. Cl.³ A44B *19/36*
U.S. Cl. 24—383 **14 Claims**

1. A slide fastener chain having a pair of interengaged stringers readied for being threaded through a slider, comprising:

(a) a pair of first and second stringer tapes having a pair of first and second longitudinally staggered ends, respectively, spaced longitudinally from each other by a distance greater than the length of the slider, said first stringer tape being longer than said second stringer tape; and

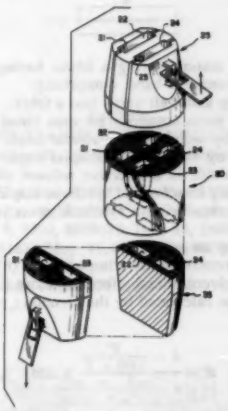
(b) a pair of first and second rows of coupling elements mounted respectively on said first and second stringer tapes and including coupling heads intermeshing with each other, said first row of coupling elements including a series of coupling elements left uncoupled over said distance, and a predetermined number of coupling elements following said series of coupling elements below said second end and having their coupling heads cut off, whereby said predetermined number of coupling elements on said first stringer tape are separated from said opposite intermeshing coupling elements on said second stringer tape.

4,485,534

INTERCHANGE MECHANISM FOR MULTIPLE FASTENERS

Roland J. Pillé, Williamsville; Albert S. Baum, Eggertsville, and Anthony L. Russo, Elma, all of N.Y., assignors to Calspan Corporation, Buffalo, N.Y.

Filed Dec. 23, 1982, Ser. No. 452,658
Int. Cl.³ A44B *19/00*
U.S. Cl. 24—384 **6 Claims**



1. Apparatus for attaching and detaching two flexible panels, each of said panels being provided with an opening, the side of said openings including mating parts of a continuous flexible fastener strip, comprising

an elongated slide member having four generally elongated passages including merging parts of said passages at one end of said slide member adapted to receive said parts of said fastener strips, said passages separating in the central part of said slide member and having parts merging different ones of said passages at the other end of said slide member to bring said fastener strips into contiguous relation with the mating parts arranged such that one part of each fastener strip is mated with an opposite part of the other fastener strip by moving said slide member along said strips simultaneously and progressively separating the mating parts of the fastener strips and joining the parts with opposite parts of the other fastener strip,

whereby joining and/or separating the edges of the two openings is accomplished to form and/or close a distendable passage through the panels, said passage being defined by the parts of the two joined fastener strips.

4,485,535

METHODS OF MANUFACTURING PILE FABRIC

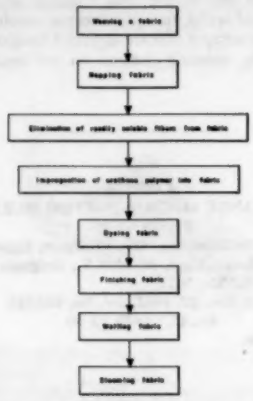
Takashi Oishi, Ohtsu, Japan, assignor to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 144,858, Apr. 29, 1980, abandoned. This application Feb. 11, 1982, Ser. No. 348,148

Claims priority, application Japan, May 4, 1979, 54-54026

Int. Cl.³ D06C 11/00, 27/00

U.S. Cl. 28—162 6 Claims



1. Method of manufacturing a fabric having a distinctive cashmere- or vicuna-like hand, comprising:

(1) weaving warp and weft yarns into a fabric,

(A) said warp yarns comprising a spun blend of

(i) 60–90% by weight of a synthetic staple fiber and

(ii) 10–40% by weight of a crimped staple fiber which is readily soluble in a selective solvent which does not substantially dissolve the synthetic staple fiber (i),

(B) said weft yarn being a synthetic spun yarn of 0.4–1.4 denier,

(2) raising the nap on said fabric,

(3) substantially removing the crimped fibers (ii) by dissolving them in said solvent, thereby forming more than 80% voids in said fabric as calculated by the formula

$$E = \frac{S - \frac{W}{1000 \times T}}{S} \times 100$$

wherein E is the percentage of voids in the fabric structure, W is the weight of the fabric in grams per square meter, T is the thickness of the fabric in millimeters and S is the specific gravity of the fibers in grams per cubic centimeter.

4,485,536

HEEL GRIP WITH PEDAL OPERATED SKI BRAKE FOR ROTARY SKI BINDING

Gerd Klubitschko, Oberau, Fed. Rep. of Germany, assignor to Marker-Patentverwertungsgesellschaft mbH, Baar, Switzerland

Filed Feb. 9, 1982, Ser. No. 347,225

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1981, 3107035

Int. Cl.³ A63C 7/10

U.S. Cl. 280—605 4 Claims

1. A heel grip for a safety ski binding for mounting on a generally planar ski having a longitudinal axis, said heel grip comprising:

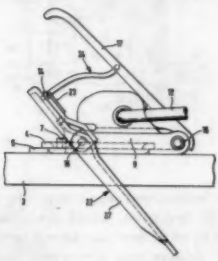
a retaining plate mountable on the ski;

a rotary plate rotatably mounted on said retaining plate for rotation relative to said retaining plate about an axis normal to the ski plane, said retaining plate and said rotary plate having cooperating means for limiting the range of rotation of said rotary plate, said cooperating means including a recess in said retaining plate which receives a nose in said rotary plate;

a pedal pivotally mounted on said rotary plate for rotation about an axis transverse to the rotational axis of said rotary plate and parallel to the ski plane between a non-skiing position spaced from said rotary plate and a skiing position adjacent said rotary plate;

spring means biassing said pedal away from said rotary plate;

a ski brake pivotally mounted on said rotary plate, said ski brake comprising a lever pivotally attached to said rotary plate for rotation about a braking axis parallel to and forward of the axis of said pedal between a braking position and a skiing position, a pair of braking wings pivotally mounted at spaced positions on said lever for rotation with said lever between the braking position wherein said



braking wings extend beneath the plane of the ski and the skiing position wherein the braking wings are disposed above the plane of the ski, said braking wings being pivotal about parallel axes transverse to the rotational axis of said lever between positions outboard of the ski and inboard of the ski, and connecting means having free end portions connected respectively to said braking wings for rotating said braking wings about their respective parallel axes, said connecting means being movable in response to movement of said pedal from its non-skiing position towards its skiing position to move said lever from its braking position to its skiing position and said connecting means being further movable in response to the movement of said pedal to its skiing position to rotate said braking wings to the inboard positions, and said connecting means rotating said braking wings to the outboard positions in response to movement of said pedal out of the skiing position.

4,485,537

MACHINE FOR THE MACHINING OF CRANKSHAFTS

Garri Berstein, and Willy Hansen, both of Erkelenz, Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt GmbH, Erkelenz, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 412,598

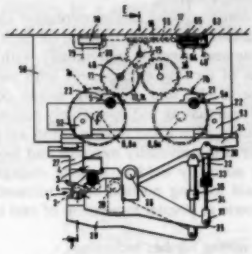
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1982, 3224268

Int. Cl.³ B21K 1/08; B21D 21/00

U.S. Cl. 29—6 13 Claims

1. In a crank rolling machine adapted to be adjusted for rolling of the crank fillets of cranks of a variety of different angular configurations, said machine including means for rotatably supporting a crankshaft to be rolled, rolling means for applying rolling forces to said fillets, first and second control crankshafts operatively connected to said rolling means for controlling the rotated position of said crankshaft to be rolled in accordance with the rotated position of said control crankshafts, drive means for synchronously rotating said control crankshafts and said crankshaft to be rolled, the improvement

which comprises said control crankshafts each comprising a plurality of crank sections, said sections being relatively rotatably adjustable one to the other about the axis of rotation of



said control crankshafts, whereby the angular orientation of the crank sections of said control crankshafts can be adapted to process crankshafts of a variety of configurations.

4,485,538

BUILDING PLANKS AND APPARATUS FOR MAKING THE SAME

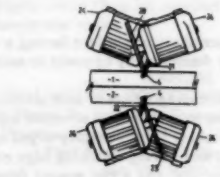
Johannes J. Van Loghem, and Johannes La Grouw, both of Russell Rd., Rotorua, New Zealand

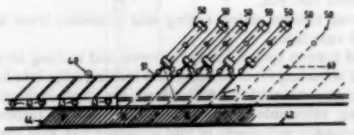
Division of Ser. No. 967,117, Dec. 7, 1978, Pat. No. 4,285,181. This application Dec. 15, 1980, Ser. No. 216,507

Claims priority, application New Zealand, Dec. 15, 1977, 185995

Int. Cl.³ B21B *15/00*; B21D *39/03*; B23P *23/04, 25/00*

U.S. Cl. 29—33 K **5 Claims**





1. Apparatus for use in producing insulated planks having foamed insulation between two boards held in spaced apart disposition by spaced webs therebetween, comprising:

dovetailing means for providing a plurality of spaced apart dovetail grooves in exposed surfaces of said boards, the dovetail grooves being at an angle to the longitudinal axis of the boards and being spaced apart at predetermined intervals along the length of the boards comprising, a plurality of saws or like cutting means arranged to be operated along a path to provide the dovetail grooves at said angle; clamping means adapted to clamp two boards face to face while the dovetailing operation is being carried out, one group of said saws being positioned on one side of the clamped boards and the other group being positioned on the other side of said boards; automatic indexing means for moving the boards at intervals between the cutting of one set of dovetail grooves and the cutting of a next set of dovetail grooves comprising, first and second moving means arranged so that after a traverse of said saws over said boards to cut grooves therein, the boards are moved a distance equal to the spacing between successive dovetail grooves by said first moving means and the saws reversed in traverse to cut a next group of dovetail grooves being spaced apart by the desired spacing, the boards being moved a multiple of said spacings by said second moving means so that a new cycle of movement by said first moving means can commence; means for inserting a plurality of said webs having dovetail profiled edges in said dovetail grooves when said boards are arranged spaced apart with the dovetailed grooves facing each other; means for inserting insulation comprising nozzle means arranged to inject a foamable insulating material into the spaces between said webs and said boards; and a lower resilient endless belt arranged to seal the gap between the boards at least along a lower part thereof to hold the foamable material in position during foaming thereof.

4,485,539

METHOD AND JIG FOR FURNITURE CONSTRUCTION

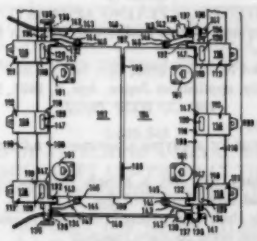
Anthony F. Blaine, Stamford, England, assignor to Prutec Limited, England

Filed Dec. 7, 1981, Ser. No. 328,076

Claims priority, application United Kingdom, Dec. 8, 1980, 8039231; Dec. 9, 1980, 8039372; Dec. 19, 1980, 8040699; Mar. 16, 1981, 8108161; May 18, 1981, 8115097; May 26, 1981, 8116017

Int. Cl.³ B25H *1/04, 1/10, 7/02*

U.S. Cl. 29—91.1 **4 Claims**

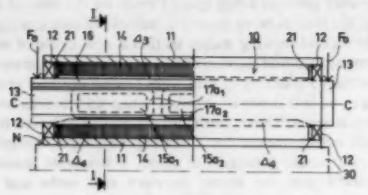


1. A method of constructing a carcase-type article of furniture, which comprises placing down horizontally a panel which is to form a part of the finished article, assembling a jig around the panel using the panel as a template, the jig including abutment surfaces to contact the edges of the panel and locating means in predetermined positions relative to the abutment surfaces to define a position for each of a plurality of carcase walls and to locate the walls in position for being secured to one another, cutting each of the carcase walls to a respective desired size, placing the carcase walls edge down within the locating means defined by the jig, and securing the walls to one another, thereby forming a carcase-type article; the walls of which are correctly aligned with the edges of the panel.

4,485,540
ROLL MAGNETICALLY COMPENSATED AND/OR CONTROLLED OF ITS DEFLECTION

Jaakko Riihinen, Jyväskylä , Finland, assignor to Valmet OY, Finland

Filed Mar. 24, 1982, Ser. No. 361,388
Claims priority, application Finland, Apr. 8, 1981, 811078
Int. Cl.³ B21B *13/02, 13/14*
U.S. Cl. 29—116 AD **17 Claims**



1. A roller used as a press or calender roller in a paper machine, said roller being compensated for deflection and end-loaded, and having

a stationary axle having spaced opposite ends at which said roller is loaded, and

a cylindrical shell rotatably mounted on said axle,

said shell including an inner part,

said axle having a magnetic core portion within said shell,

said magnetic core portion having pole shoes spaced from said shell by air gaps, and

magnetizing coils of electircal conductors thereon at corresponding ones of said pole shoes,

said coils producing a magnetomotive force and being positioned in a manner whereby magnetic flux passing through the air gaps between said pole shoes and said shell created a force field between said shell and said magnetic core,

said inner part of said shell bounding said air gaps,

said roller comprising

said inner part of said shell consisting of a stack of sheets of magnetically well-conductive material separated from each other by electrical insulation, thereby reducing eddy current losses.

4,485,541
FASTENER APPLYING APPARATUS

Fumio Seki, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 30, 1982, Ser. No. 363,445
Claims priority, application Japan, Apr. 9, 1981, 56-51270[U]
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—251 **2 Claims**

1. An apparatus for applying a fastener to a fabric, comprising:

(a) a stationary die and a punch reciprocally movable towards and away from said die;

(b) a rotatable shaft operatively connected to said punch for driving same upon rotation thereof;

(c) a continuously rotating source of power;

(d) a single revolution clutch disposed between said power source and said shaft and normally retaining them out of rotational engagement with each other, said single revolution clutch including:

a polygonal boss secured to said shaft,

an outer ring connected to said power source,

an intermediate ring rotatably disposed between said boss and said outer ring and having a plurality of angularly spaced slots, said intermediate ring having an annular extension projecting axially beyond said outer ring and said boss, said annular extension having on its outer periphery a locking jaw, and

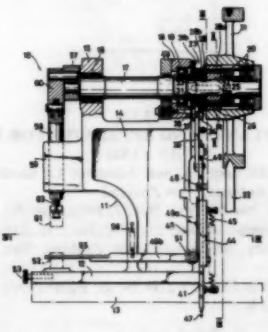
rollers received respectively in said slots in rolling engagement with said boss and said outer ring, and said single revolution clutch, upon activation, interconnecting said power source and said shaft to enable the latter to make one revolution, whereby said punch completes one cycle of reciprocation;

(e) means for actuating said single revolution clutch; and

(f) a pair of interlocking levers disposed on each side of said stationary die and movable individually with each other into and out of locking engagement with said actuating means, respectively, said actuating means comprising a foot-operative actuating rod operatively connected to said single revolution clutch and having a stop, each said interlocking lever being pivotally movable and having a locking portion normally held in locking engagement with said stop, said locking portion being released from said stop in response to pivotal movement of said interlocking lever,

said actuating means further including:

a cam plate secured to said shaft and having a cylindrical hub rotatably received in said annular extension and a flange extending radially outwardly from said hub, said



flange having on its periphery a cam face having a vertex disposed substantially diametrically opposite to said locking jaw,

a first tension spring extending between said intermediate ring and said cam plate to enable them to rotate together,

a pivotably supported locking lever normally urged against said annular extension and having a locking edge engageable with said locking jaw and a pin spaced from said locking edge,

an actuating lever pivotably connected at its one end to said actuating rod and having a recess normally receiving therein said pin,

a second tension spring urging said actuating lever against said cam face,

a third tension spring acting between said locking lever and said actuating lever to bring said locking edge into locking engagement with said locking jaw, said locking edge being releasable from said locking jaw in response to downward movement of said actuating rod, said pin being released from said recess in response to engagement between said vertex and said actuating lever.

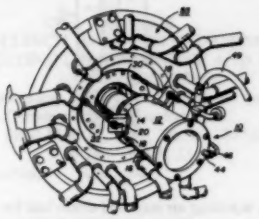
4,485,542
SEAL PLACEMENT AND REMOVAL PRESS FOR ROTATING MACHINERY

Walter J. Vasoll, Tulsa, Okla., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 13, 1982, Ser. No. 449,352
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—252 **5 Claims**

1. A pusher-puller press for installing and removing a shaft seal from a centrifugal compressor, comprising in combination:

(a) a tubular housing having an axially extending internal cavity adapted to receive an outwardly extending end portion of a compressor shaft about which a seal is to be installed or removed;
(b) support means adapted to mount said housing in a secured relation to a centrifugal compressor positioned coaxially with respect to the compressor shaft and a concentric seal cavity thereat;
(c) a piston-cylinder-arrangement contained within said housing surrounding said housing cavity with the piston of said piston-cylinder being operably displaceable, when said housing is mounted by said support means, in an axial direction toward and away from the seal cavity of the compressor;



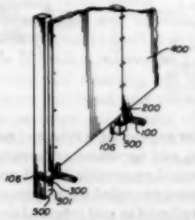
(d) an annular adapter having a central opening generally concentric with said housing cavity, said adapter being connected to said piston facing the compressor for displacement with the piston and having fastener means by which to secure a seal mounted concentric with said displacement axis in a plane transverse thereto; and
(e) pneumatic control means operable between a first relation effective to pressurize said cylinder and displace the piston and adapter toward the compressor cavity to an installed position of a seal and a second relation effective to pressurize said cylinder and displace the piston and adapter away from an installed position of a seal in the compressor cavity.

4,485,543

WALLBOARD POSITIONING APPARATUS

Rodolfo Flores, Jr., and Oscar Flores, both of 1911 Windy Peaks Ct., Houston, Tex. 77067

Filed Mar. 14, 1983, Ser. No. 451,462
Int. Cl.³ B25B *27/14*
U.S. Cl. 29—281.1 **1 Claim**



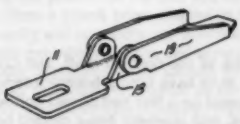
1. An apparatus for holding wallboard in place during the installation operation being performed by as few as one workman, comprising:
(a) a self locking wrench means having a range of use in conjunction with structural members which may vary in thickness between sheet metal gage thickness and typical wooden structural members such as studs and rafters thickness,
(b) a stop having an interface parallel to wallboard which is attached on one side of the said self locking wrench means;
(c) a post which is threaded and perpendicular attached on the said self locking wrench means on the side opposite to that side of said self locking wrench means whereat the said stop is attached;
(d) a proximity locating means having a surface ajustably parallel to said wallboard means surface perpendicular to each other and having an axially located slot on said proximity locating means surface; and
(e) tightening means which are locateable on said post used in fastening said proximity locating means on the side opposite of said self locking wrench means to which said stop is located.

4,485,544

METHOD OF MAKING ARTICLES COMPRISING TWO COMPONENTS HINGED ONE TO THE OTHER

Henricus J. Van Ryswyk, 34 View St., Annandale, 2038, New South Wales, Australia

Filed Feb. 18, 1982, Ser. No. 350,034
Claims priority, application Australia, Mar. 4, 1981, PE7843
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—417 **6 Claims**



1. A method of making two components as a hinged assembly comprising the steps of feeding separate strips of work stock intermittently and simultaneously into opposite portions of a phased die and operating the phased die to simultaneously form both strips and thereby press-forming two, co-planar, oppositely directed lugs on one piece of work stock, press-forming two parallel spaced apart co-directed lugs on the other piece of work stock, press-forming a clearance hole in each of two of said four lugs, press-forming a protrusion on each of the other two of said four lugs, press-forming said co-planar, oppositely directed lugs into a U-shape, then press-folding said co-directed lugs towards each other to embrace said U-shaped lugs, said protrusions being disposed in a direction so that by said folding step said protrusions are engaged respectively into associated said clearance holes, and then press-severing each of the formed portions of the assembly from the work stock to produce two components hingedly connected together with the two clearance holes and two protrusions co-axial on the hinge axis.

4,485,545

METHOD OF ATTACHING A METAL SHAFT TO A CERAMIC SHAFT AND PRODUCT THEREOF

John C. Caverly, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 7, 1983, Ser. No. 511,436
Int. Cl.³ B23P *11/02*; F16C *9/00*
U.S. Cl. 29—447 **4 Claims**

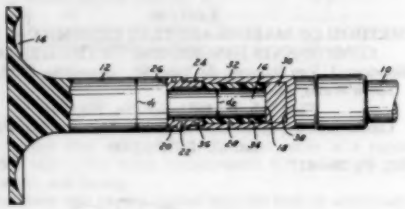
1. A method of attaching a metal shaft to a ceramic shaft having a first diameter, characterized by the steps of:
forming on the ceramic shaft a shaft portion having a second diameter less than the first diameter of the ceramic shaft, said shaft portion extending from a free end of the ceramic shaft along a portion of the length of the ceramic shaft to a terminal end thereof where the ceramic shaft is of the first diameter;
placing on said shaft portion in an encircling relationship therewith a circular shaped metal lock nut which has an internal diameter slightly greater than said second diameter of said shaft portion of the ceramic shaft, said metal

lock having threads on an outer facing surface thereof, a back end of said metal lock nut being located adjacent said terminal end of said shaft portion of the ceramic shaft;

placing on said shaft portion of the ceramic shaft in an encircling relationship therewith a circular shaped expansion sleeve which has an internal diameter slightly greater than said second diameter of said shaft portion of the ceramic shaft, said expansion sleeve extending along said shaft portion from said metal lock nut to said free end of said shaft portion;

cooling the ceramic shaft, said metal lock nut and said expansion sleeve to contract all of said mentioned members;

assembling with said cooled members (1) an adjustable metal plug which is positioned adjacent said free end of said



shaft portion of the ceramic shaft, and (2) a metal shaft formed so as to have both a hollow interior portion and threads formed on a free end of said hollow interior portion thereof, said assembly being carried out in a manner such that (A) said threads on said outer surface of said lock nut are engaged with said threads formed on said free end of said hollow interior portion of said metal shaft, (B) said expansion sleeve is trapped in a volume defined by said shaft portion of the ceramic shaft, said hollow interior portion of said metal shaft, said lock nut, and said adjustable metal plug, and (C) said adjustable plug is encircled by said hollow interior portion of said metal shaft and is located between said free end of said shaft portion of the ceramic shaft and a closed end of said hollow interior portion of said metal shaft.

4,485,546

METHOD AND APPARATUS FOR PACKING INSULATION MATERIAL IN HOLLOW BLOCKS

Lennart Forslund, Ljusdal, Sweden, assignor to Färila Lättblock AB, Färila, Sweden

PCT No. PCT/SE81/00182, § 371 Date Feb. 22, 1982, § 102(e) Date Feb. 22, 1982, PCT Pub. No. WO82/00041, PCT Pub. Date Jan. 7, 1982

PCT Filed Jun. 17, 1981, Ser. No. 355,748

Claims priority, application Sweden, Jun. 23, 1980, 8004635

Int. Cl.³ B23P *11/02, 21/00*

U.S. Cl. 29—451 **13 Claims**

1. A method for filling hollow blocks with pre-cut pieces of compressible insulation material, comprising:

A. positioning a drum containing pieces of said insulation material above a conveying means for moving blocks beneath said drum;

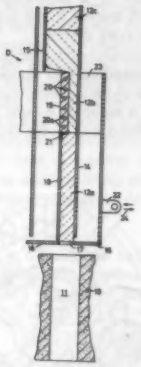
B. compressing an entire first piece of said material transversely to the longitudinal dimension of said first piece aligned with a cavity in a block beneath the drum; and thereafter

C. establishing a lower pressure through the hollow block upon the longitudinal end of the first piece located closest to the block than a second pressure upon the opposite end of the first piece remote from the block, whereby the resulting pressure differential pulles the compressed first piece into said cavity.

5. Apparatus for filling cavities in hollow blocks with pre-cut pieces of compressible insulation material comprising:

A. a drum for containing at least one said piece;

B. a press plate contained within said drum, said press plate being laterally movable in relation to the drum to entirely compress said piece within said drum; and



C. means for injecting air into said drum and for direction of the air against an end of said piece to force the compressed piece out of said drum and into said cavity.

4,485,547

APPARATUS FOR PRESSURE FITTING A TUBE IN A PLATE, E.G. A TUBE SHEET

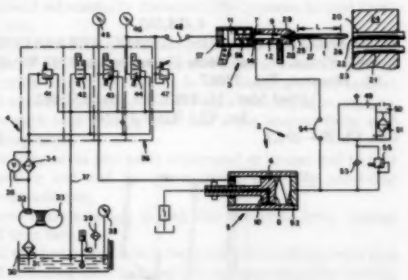
Wilfried Busse, Harkortstrasse 8-10, 4630 Bochum, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 349,259

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1981, 3105735

Int. Cl.³ B21D *39/00*

U.S. Cl. 29—523 **3 Claims**



1. An apparatus for expanding a tube and received in a plate such as a tube sheet, said apparatus comprising:

an expansion mandrel receivable in and sealed against said tube end and being provided with a passage for delivering a filling pressure liquid to said tube end to expand the same and pressure fit the tube in said plate;

an expansion pressure generator comprising a body forming a cylinder, a stepped piston received in said cylinder and having a small cross section step forming a plunger for pressurizing said filler pressure liquid, and a large cross section step pressurizable by an expansion pressure liquid, and means for delivering said expansion pressure liquid under pressure to said cylinder to displace said piston and generate an expansion pressure in said filling pressure liquid; and

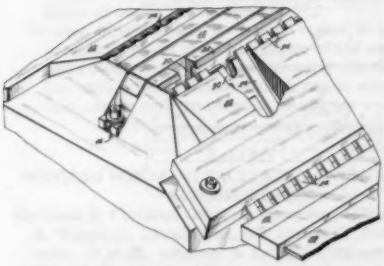
a source of said filling pressure liquid and means including a port in said body communicating with said passage for supplying said filling pressure liquid to said passage while said piston is in a retracted position, said piston blocking said port and the flow of said filling pressure liquid when in an advanced position of said plunger, said expansion pressure generator including an expansion pressure seal recessed in a wall of said cylinder, said port being disposed upstream of said seal in an advancing direction of displacement of said piston and said seal cooperating with said plunger only in said advanced position to pressurize said filling pressure liquid.

4,485,548

CUT AND CLINCH HEAD FOR TRIMMING, FORMING AND DETECTING LEAD PRESENCE AND ABSENCE OF DIP COMPONENTS

Stanley Janisiewicz, Endwell, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Filed Mar. 11, 1982, Ser. No. 357,075
Int. Cl.³ H05K *13/04*
U.S. Cl. 29—566.3 **4 Claims**



1. An apparatus for trimming and forming in-line rows of leads of an electronic component which extend through holes in and below the underside of a circuit board such that an excess portion of each lead is trimmed off and a remaining portion of each lead is formed by bending so as to clinch said component to said circuit board, said apparatus comprising:

a head assembly comprising spaced, fixed anvils and movable trimming and forming arms, each of said trimming and forming arms cooperating with a respective anvil to trim and form the leads of one of said rows of leads which extend below said circuit board;

means for biasing each of said trimming and forming arms away from said respective anvil so as to provide a gap into which a row of leads is receivable;

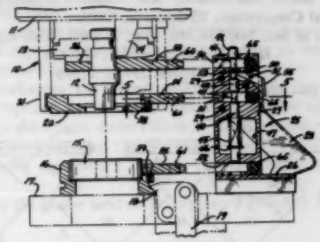
means for moving said trimming and forming arms across said anvils upon command; and means for detecting individually the presence and absence of each of said leads extending below said circuit board, said detecting means comprising an in-line row of separate flexible contact fingers attached to each of said anvils respectively, means for insulating electrically each of said fingers one from the other and from said anvil to which said fingers are attached and each of said contact fingers being engageable with said remaining portion of a respective lead after said trimming and during said bending, such that said trimming and forming arms push each said remaining portion into contact with a respective finger during said bending so as to complete a separate electrical circuit through each particular remaining portion to a respective finger upon the presence of said particular remaining portion and not to complete said circuit upon the absence of said particular remaining portion.

4,485,549

APPARATUS FOR CHANGING THE TOOLS OF A PUNCH PRESS

Theodore F. Brolund, Rockford, Ill., assignor to W. A. Whitney Corp., Rockford, Ill.

Filed May 9, 1983, Ser. No. 492,796
Int. Cl.³ B23Q *3/157*
U.S. Cl. 29—568 **9 Claims**



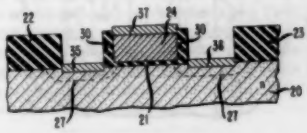
1. The combination of a coacting punch and die and apparatus for inserting the punch and die into and for removing the punch and die from a punch press adapted to reciprocate the punch downwardly and upwardly, the punch and the die each having a laterally projecting tongue, said apparatus comprising a member having upper and lower sockets for telescopically and non-rotatably receiving the tongues on the punch and the die, respectively, and selectively releasable coacting means on each tongue and within each socket for retaining the tongue in the socket while permitting selective endwise removal of the tongue from the socket.

4,485,550

FABRICATION OF SCHOTTKY-BARRIER MOS FETS

Conrad J. Koeneke, Fanwood; Martin P. Lepselter, and William T. Lynch, both of Summit, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 23, 1982, Ser. No. 401,142
Int. Cl.³ H01L *21/28*
U.S. Cl. 29—571 **5 Claims**



1. A method of fabricating an integrated circuit structure in a semiconductive substrate of a specified conductivity type, said structure including transistor devices each comprising Schottky-barrier source and drain contacts and a gate contact for electrically inducing a channel in a lateral extent of said substrate between said source and drain contacts, said method comprising

establishing a dopant concentration of the opposite conductivity type in said substrate immediately adjacent the source contact-to-channel interface, which concentration is sufficiently higher than the dopant concentration in said substrate to decrease the source contact-to-channel Schottky-barrier height, and establishing a dopant concentration of said opposite conductivity type in said substrate adjacent the entire interface between each Schottky-barrier drain contact and said substrate to reduce drain contact-to-substrate leakage current while maintaining the structure immune to parasitic bipolar transistor action for a metal-oxide-semiconductor struc-

ture and to latchup for a complementary-metal-oxide-semiconductor structure.

4,485,551

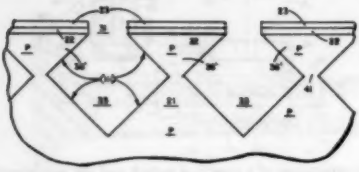
NPN TYPE LATERAL TRANSISTOR SEPARATED FROM SUBSTRATE BY O.D.E. FOR MINIMAL INTERFERENCE THEREFROM AND METHOD FOR PRODUCING SAME

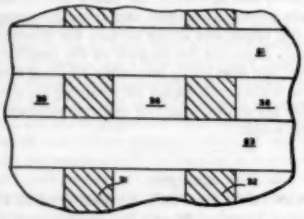
Sidney I. Soclof, San Gabriel, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

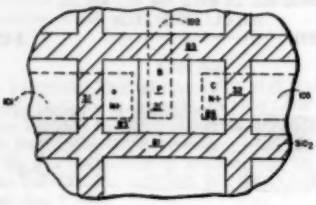
Division of Ser. No. 239,748, Mar. 2, 1981,. This application Dec. 16, 1982, Ser. No. 450,308

Int. Cl.³ H01L *29/06, 21/76*

U.S. Cl. 29—576 W **7 Claims**







1. A method for forming an array of sub-micron dimensioned NPN-type lateral transistors on a substrate doped P-type, wherein each transistor is formed comprising the following steps:

masking the substrate to outline a pair of boundary regions for each semi-array of active regions to become transistors;

slotting the substrate in said boundary regions to a given depth;

etching away the substrate via said slots sufficiently to separate the semi-arrays of active regions from the substrate except at spaced apart supporting locations therealong;

oxidizing the substrate and semi-arrays to at least substantially completely oxidize the peripheries of the semi-arrays;

slotting the substrate orthogonally to the first mentioned slots to provide second slots with orthogonal pairs of slots defining individual transistor active regions for the respective transistors;

doping the regions defined by orthogonal pairs of slots N+ via corresponding edges of the second slots and driving in the N+ doping; and,

establishing electrical connections to the outer N+ regions, and inner P region of the original substrate.

4,485,552

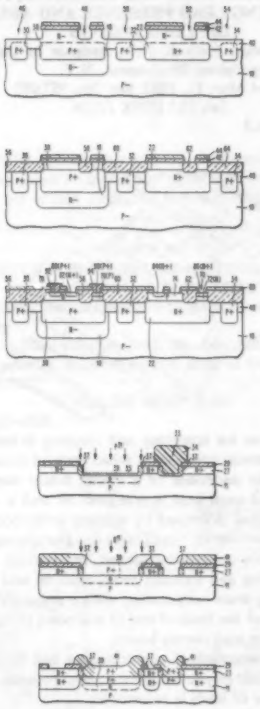
COMPLEMENTARY TRANSISTOR STRUCTURE AND METHOD FOR MANUFACTURE

Ingrid E. Magdo, Hopewell Junction, and Hans S. Rupprecht, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 113,168, Jan. 18, 1980, Pat. No. 4,357,622. This application Jul. 19, 1982, Ser. No. 399,927

Int. Cl.³ H01L *21/22, 21/76*

U.S. Cl. 29—577 C **10 Claims**



1. A method of fabricating a transistor structure including a complementary pair of vertical bipolar transistors on a common semiconductor material, said method comprising;

forming a barrier region of a first conductivity type having a relatively uniform impurity concentration in the range from about 1×10^{16} to about 5×10^{17} atoms/cc in the surface of a monocrystalline semiconductor substrate of a second conductivity type;

forming simultaneously a collector region having a peak impurity concentration in the range from about 1×10^{18} to about 1×10^{20} atoms/cc for one of said complementary transistors of a second conductivity type within said barrier region and an isolation region of a second conductivity type in said substrate, said isolation region surrounding at least said one transistor;

forming a collector region of a first conductivity type for the

other of said complementary transistors in the surface of said substrate;

forming an epitaxial layer of semiconductor material of said first conductivity type on the surface of said substrate over said collectors and said barrier region;

forming recessed oxide isolation regions surrounding each of said transistors by forming a masking layer having windows on said epitaxial layer, etching the surface of said epitaxial layer through said windows and thermally oxidizing the etched areas;

forming a collector reach-through region of said first conductivity type in the epitaxial layer overlying the collector of the transistor;

forming simultaneously a collector reach-through region of said second conductivity type in the epitaxial layer overlying the collector of said one transistor and a base region of said second conductivity type in the epitaxial layer overlying said collector of the other transistor;

forming a base region of said first conductivity type in the epitaxial layer overlying said collector of said one transistor;

forming simultaneously a base contact of said first conductivity type over the base region of said one transistor, an emitter region of said first conductivity type over the base region of said other transistor and a collector contact of the first conductivity type in the surface of the reach-through region which extends into contact with the collector of said other transistor; and

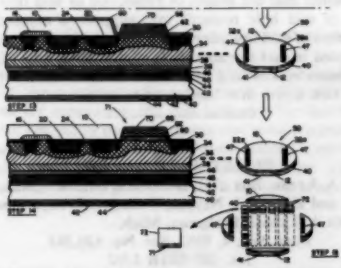
forming simultaneously an emitter region of said second conductivity type in the base region of said one transistor and a collector contact of said second conductivity type in the surface of the reach-through region which extends into contact with the collector of said one transistor.

4,485,553

METHOD FOR MANUFACTURING AN INTEGRATED CIRCUIT DEVICE

Raymond R. Christian, Oaklawn; Harry Sue, Chicago; Herbert A. Waggener, Lincolnshire, and Joseph C. Zuercher, Wilmette, all of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Jun. 27, 1983, Ser. No. 508,314
Int. Cl.³ H01L *21/78, 21/95*
U.S. Cl. 29—589 **7 Claims**



1. A method for manufacturing an integrated circuit device comprising the steps of:

(A) processing a silicon circuit wafer (**10**) to form an integrated circuit (**14**) including an active circuit (**19**) and at least one alignment pattern (**32**) on a first surface of the circuit wafer;

(B) surrounding at least a portion of the active circuit (**19**) with a barrier (**24**) to environmental contaminants by forming a moat (**18**);

(C) placing a conductor (**30**) over the barrier (**18, 24**) placed in Step B to provide an interconnection between a selected location of the active circuit (**19**) and a selected contact surface (**22**) outside of the portion of the active circuit surrounded by the barrier (**24**);

(D) preparing the surface of a support wafer (**40**) for subsequent processing;

(E) positioning the first surface of the circuit wafer (**10**) opposing the first surface of the support wafer (**40**);

(F) forming a layer of adhesive (**46**) on the opposing first surfaces of said circuit and support wafers (**10, 40**) so as to cause the two wafers to adhere together forming a wafer sandwich (**50**);

(G) photoshaping an opening (**47**) through the circuit wafer (**10**) to expose indicia (**32*a***) corresponding to the alignment pattern (**32**);

(H) photoshaping the circuit wafer (**10**) using the indicia (**32*a***) exposed in Step F to produce contact openings through the circuit wafer (**10**) to selected contact surfaces (**22**) of the integrated circuit (**14**);

(I) preparing the contact surfaces (**22**) exposed in Step H; and

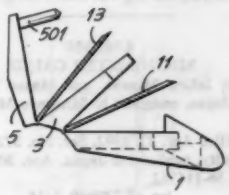
(J) slicing the wafer sandwich (**50**) into a plurality of chips (**72**).

4,485,554

DOUBLE BLADE RAZOR HEAD WITH THREE ELEMENTS MOLDED IN CONTINUOUS MANNER

Athos Bergamaschi, Castelmaggiore, Italy, assignor to Elberel Italiana di Bergamaschi Athos, Italy

Filed May 23, 1983, Ser. No. 497,153
Claims priority, application Italy, Jan. 14, 1983, 9307 A/83
Int. Cl.³ B26B *21/14*
U.S. Cl. 30—50 **10 Claims**



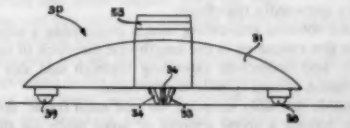
1. A razor head comprising: at least three parts made of plastic which are hinged with one another along flexible zones in a continuous manner; two blades located and engaged between said parts when said parts are overturned on one another in the arrangement of use, while one of these three parts is located in an intermediate position between the blades and the remaining two parts outside the blades.

4,485,555

DRAFTING DEVICE FOR USE WITH COMPUTERS

Richard L. May, Manhattan Beach, and Kenneth J. Curren, Thousand Oaks, both of Calif., assignors to Androbot Singapore Pte. Ltd., Singapore

Filed Jun. 2, 1983, Ser. No. 500,279
Int. Cl.³ B43L *13/00*
U.S. Cl. 33—18 R **8 Claims**



1. A drawing device designed to move along a surface, comprising:

a platform;

a marking instrument depeading from the platform and having a lower portion positioned to contact the surface at a first point;

a pair of wheels mounted equidistantly on opposite sides of the instrument to contact the surface at second and third points, respectively, where the first, second and third points are colinear and the second and third points are as close as practical to the first point, each of the pair of wheels being mounted to rotate freely;

a drive wheel depending from the platform and seprated from the instrument on a line therefrom perpendicular to the line connecting the first, second and third points;

means for moving the drive wheel to cause the drawing device to move; and

means for varying the angle at which the drive wheel moves.

5. A drawing device designed to move along a surface, comprising:

a platform;

a marking instrument depending from the platform and having a lower portion positioned to contact the surface at a first point;

a pair of wheels mounted equidistantly on opposite sides of the instrument to contact the surface at second and third points, respectively, where the first, second and third points are colinear, each of the pair of wheels being mounted to rotate freely and being canted toward the lower portion of the marking instrument;

a drive wheel depending from the platform and separated from the instrument on a line therefrom perpendicular to the line connecting the first, second and third points;

means for moving the drive wheel to cause the drawing device to move; and

means for varying the angle at which the drive wheel moves.

4,485,556

MICROMETER GAUGE

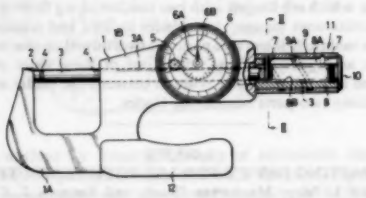
Hideo Sakata; Ichiro Mizuno, and Masao Nakahara, all of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1982, Ser. No. 372,361

Claims priority, application Japan, Apr. 30, 1981, 56-65704; Jul. 21, 1981, 56-114162

Int. Cl.³ G01B *3/18*

U.S. Cl. 33—147 G **15 Claims**



1. A micrometer gauge comprising:

a main frame;

an elongated spindle mounted on said main frame for axial sliding movement in the lengthwise direction thereof, said spindle having an engageable projection extending radially outwardly therefrom;

spindle rotation preventing means comprising a non-rotatable slot extending in the lengthwise direction of said spindle, said projection extending through said slot so that rotation of said spindle is prevented;

a thimble rotatably mounted on said main frame, said thimble having a spiral groove of large pitch on the inner peripheral surface thereof, the radially outermost end of said projection being received in said spiral groove for sliding movement therealong, whereby rotation of said thimble causes lengthwise movement of said spindle with respect to said main frame; and

an indicator coupled to said spindle and responsive to lengthwise movement of said spindle for indicating a dimension of a workpiece.

4,485,557

CLAMP DEVICE FOR HEIGHT GAUGE

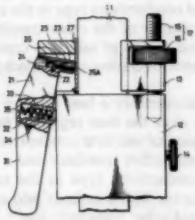
Akihiko Shizuri, Utsunomiya, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1983, Ser. No. 465,075

Claims priority, application Japan, Feb. 17, 1982, 57-20835[U]

Int. Cl.³ G01B *5/02*

U.S. Cl. 33—169 R **6 Claims**



1. A height gauge comprising: an upright support; a slider slidably mounted on said support; a feed box slidably mounted on said support; fine movement means connecting said feed box to said slider so that the position of said slider with respect to said feed box can be finely adjusted;

a sheet spring secured to said feed box, said sheet spring having one face which contacts said support when said sheet spring is urged against said support;

a lever pivotally mounted on said feed box and provided at one end portion thereof with abutting means capable of abutting against said sheet spring and urging said one face of said sheet spring into contact with said support, said lever being provided at the other end portion thereof with a handgrip extending alongside said slider, said abutting means including a first screw, one end of which first screw abuts against said sheet spring, said first screw being threadedly coupled in a threaded hole in said lever in such a manner that the length of projection of said first screw out of said hole towards said support is adjustable by rotation of said first screw, and a second screw threadedly coupled in said threaded hole of said lever and engaging the inner end of said first screw so as to releasably lock said first screw in a fixed position in said hole.

4,485,558

FILLET WELD GAUGE

Goodwin A. Lycan, Box 17D, Dunewood Dr., Bridgman, Mich. 49106, and Edward J. Neyens, Dubuque, Iowa, assignors to Goodwin A. Lycan, Bridgman, Mich.

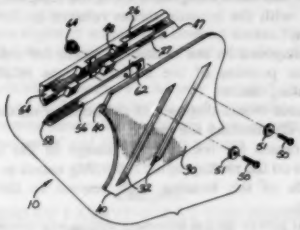
Filed Aug. 4, 1983, Ser. No. 520,293

Int. Cl.³ G01B *5/02*

U.S. Cl. 33—169 D **3 Claims**

1. A gauge for measuring the dimensions of a fillet weld joining two structural members, said fillet weld including first and second legs and a throat, said gauge including a body member and an arm, said body member including a face having a scale, a part of said body member being positionable against said weld first leg, an arm positioned upon said body member face, means mounting said arm to said body member for sliding movement of the arm relative to said body member part over said scale and against said weld second leg wherein the resulting reading upon said scale of the position of the arm is indicative of the dimensions of said weld, said means for mounting said arm to said gauge body member including a slot extending

through said face, said arm including parts slidably fitted within said slot, the improvement wherein said arm includes an interior channel, a bar slidably fitted within said channel, said bar capable of achieving extended and retracted positions, a scale imprinted upon said bar, said body member including



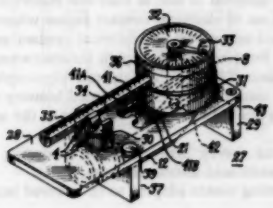
corners positionable against said structural members, said bar contacting said weld throat when said corners are positioned against said structural members and said bar is in its said extended position, wherein the resulting reading from said bar scale is indicative of the thickness of said weld throat.

4,485,559

MOUTHPIECE FACING GAUGE

Robert A. Lorenzini, P.O. Box 91, Hancock, Mass. 01237

Filed Dec. 13, 1982, Ser. No. 448,977
Int. Cl.³ G01B *5/00, 5/20*
U.S. Cl. 33—174 R **25 Claims**



1. A gauge for measuring the mouthpiece of woodwind instruments comprising:

table means for supporting the mouthpiece in a fixed position with the mouthpiece facing exposed; a dial indicator; and

means for supporting the dial indicator for linear motion with respect to the table means and in such a manner that the stem of said dial indicator is maintained in contact with said mouthpiece facing, the dial indicator supporting means including gradation means for indicating the linear position of said dial indicator.

4,485,560

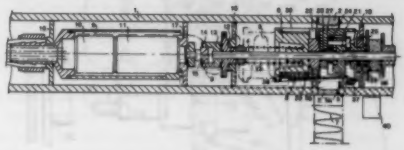
METHOD AND DEVICE FOR DETERMINING THE SHAPE OF THE INNER WALL OF A TUBE

Yves Fournier, Chatenoy le Royal; Claude Rigoulot, and Pierre Mainy, both of Chalon-sur-Saone, all of France, assignors to Creusot-Loire, Paris, France

Filed Oct. 6, 1982, Ser. No. 433,183
Claims priority, application France, Oct. 16, 1981, 81 19480
Int. Cl.³ G01B *7/28*
U.S. Cl. 33—178 F **5 Claims**

1. In a device for determining the shape of the inner wall of a tube, particularly at the level of a weld, comprising a measurement-taking apparatus constituted by a motor-reduction gear assembly (10, 11) rotating a shaft (12), a flexible rod (31) for longitudinally displacing said measurement-taking apparatus within said tube, and an apparatus for reading the measurements connected to said measurement-taking apparatus and located outside said tube, the improvement comprising

(a) a reducing gear train (24, 25, 26, 29) comprising an input wheel (21) rigidly attached to said shaft (12) and an output wheel (26);



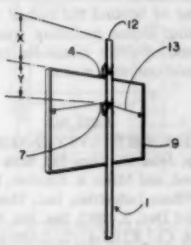
(b) a movable part (6) supporting a device for measuring the radius of said tube at a given point, said movable part also being rotatably connected to said output wheel (26) in order to turn slowly about the longitudinal axis, and in contact with a cam (28) rigidly fixed on said rod (12) so as to be displaced simultaneously in accordance with an alternating longitudinal movement.

4,485,561

PROCESS FOR HANGING FRAMED ARTICLES

William G. Hopkins, Sr., P.O. Box 6754, Greenville, S.C. 29606

Filed Sep. 23, 1982, Ser. No. 421,986
Int. Cl.³ G01B *5/00*
U.S. Cl. 33—180 R **1 Claim**



1. A process for locating an appropriate point on a wall for attaching a hanging device for a framed item, comprising:

providing a measuring device which comprises;

an elongated linear support,

a first moveable indicator selectively, slideably, moveable about the length of said linear measurer, and

a second moveable indicator similar to said first moveable indicator;

placing said linear support in a vertical orientation against a ceiling adjacent a wall;

moving said first moveable indicator to a position corresponding to the desired placement of the top of a framed item;

removing said linear support from the wall;

placing said first moveable indicator on the top of the framed item desired to be hung;

moving said second moveable indicator to the position corresponding to the hanging mechanism of said framed item;

placing said linear support in vertical alignment with said wall and marking the vertical location of said second moveable indicator; and

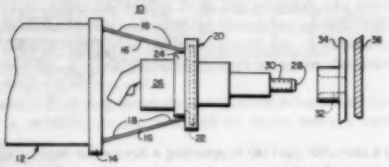
placing a hanging device at said mark for association with said hanging mechanism whereby said top of said framed item is located at said desired position.

4,485,562

VARIABLE STIFFNESS COMPLIANCE DEVICE

Thomas L. De Fazio, Watertown, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Apr. 20, 1981, Ser. No. 255,681
Int. Cl.³ B23B 45/4; G01B 5/25
U.S. Cl. 33—185 R **21 Claims**



1. A variable stiffness compliance device for engaging operator means with an engagement member comprising:

a plurality of radial members disposed along radii emanating from a first center of motion, said radial members being more stiff in a first stress range and more compliant in a second stress range;

support means for supporting the diverging end of said radial members;

operator means; and

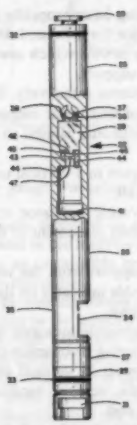
mounting means attached to the converging end of said radial members for mounting said operator means and for inducing compressive stress in said radial members in said second stress range upon said operator means contacting an engagement member, to make more compliant said radial members and establish a remote center of compliance at, near or beyond the end of the operator means, said mounting means including translation means connected to said operator means for enabling translational motion of said operator means.

4,485,563

BOREHOLE SURVEY INSTRUMENT

Harper E. Sharp; John W. Linn, III, both of Houston; Emil S. Macha, Stafford, and Miles A. Smither, Houston, all of Tex., assignors to Wilson Industries, Inc., Houston, Tex.

Filed Dec. 3, 1982, Ser. No. 446,629
Int. Cl.³ E21B 47/022; G01D 9/42
U.S. Cl. 33—314 **29 Claims**



1. A well survey instrument for recording selected wellbore parameters comprising:

elongated housing means adapted to be passed through a wellbore;

indicating means mounted to move within the housing means;

photographic recording means fixed within the housing means and axially displaced from the indicating means to move with the housing means relative to the indicating means;

indicia disposed on the indicating means for indicating the angular position of the housing means relative to the indicating means;

light source means disposed in the housing means for selectively illuminating the indicia;

optical means for focusing the image of the illuminated indicia on the photographic recording means to record the attitude of the housing with respect to the indicator means;

electrical power means disposed within said housing means;

first circuit means disposed within said elongated housing means and electrically coupled to said power means and operable in response to at least one selected electrical signal for performing a function within the elongated housing means, said first circuit means including a first set of electrical contact means on the exterior of the elongated housing means comprised of at least one electrical contact; and

second housing means separate from the elongated housing means including a second circuit means for generating said at least one electrical signal in response to an operator initiated command, said second circuit means including a second set of electrical contact means which is exposed on the exterior of said second housing means and which comprises at least one electrical contact adapted to be electrically coupled to said at least one electrical contact of said first set of electrical contact means wherein when said first and second set of electrical contact means are coupled to form an electrical path therebetween, said at least one selected input will be operatively coupled to the first circuit means within the elongated housing means to perform the desired function in response to the operator's command.

21. A wellbore survey instrument for recording selected wellbore parameters said instrument comprising:

elongated housing means adapted to be lowered into a wellbore;

indicating means mounted to move within said housing means;

photographic recording means fixed within said housing means and axially displaced from said indicating means;

indicia disposed on said indicating means facing said photographic recording means for indicating the angular position of said indicating means with respect to said housing means;

a plurality of illuminating means disposed within said housing means for illuminating said indicia in response to the application of a selected amount of electric current to each of said plurality of illuminating means;

circuit means for increasing said selected amount of electric current in response to a malfunction of one or more of said plurality of illuminating means; and

optical means for focusing the illuminated image of said indicia on said photographic recording means.

29. A wellbore survey instrument for recording selected wellbore parameters said instrument comprising:

elongated housing means adapted to be lowered into a wellbore;

indicating means mounted to move within said housing means;

photographic recording means fixed within said housing means and axially displaced from said indicating means;

indicia disposed on said indicating means facing said photographic recording means for indicating the angular positon of said indicating means with respect to said housing means;

a plurality of illuminating means disposed within said housing means for illuminating said indicia for a selected period of time;

optical means for focusing the illuminated image of said indicia on said photographic recording means;

an electrical power source mounted within said housing means for providing electrical power to said plurality of illuminating means;

first means disposed within said housing means for detecting a malfunction of one or more of said plurality of illuminating means;

visual indication means electrically coupled to said first means and said second means and observable outside of said housing means for producing a visual indication of a malfunction of said illuminating means.

4,485,564

METHOD OF CARRYING OUT THE DRYING OF WOODEN OBJECTS

Bertil G. Iverlund, Arvika; Per Olov G. Risman, Huskvarna, and Hans G. Uddborn, Arvika, all of Sweden, assignors to Aktiebolaget Edane Komponenter, Edane, Sweden

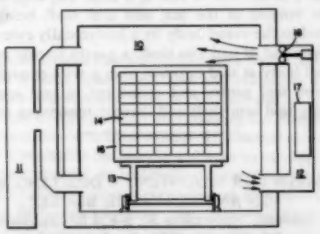
PCT No. PCT/SE81/00329, § 371 Date Jul. 6, 1982, § 102(e) Date Jul. 6, 1982, PCT Pub. No. WO82/01766, PCT Pub. Date May 27, 1982

PCT Filed Nov. 10, 1981, Ser. No. 403,516

Claims priority, application Sweden, Nov. 14, 1980, 8008033; Sep. 14, 1981, 8105457

Int. Cl.³ F26B *3/34*

U.S. Cl. 34—1 6 Claims



1. In the method of drying wood objects by subjecting the objects to microwave energy in a treatment space while circulating air in said space, the improvement comprising covering said objects with a cover of a heat insulating material that is transparent to moisture and to said microwave energy, whereby said objects are separated from said circulating air.

4,485,565

DRYING ARRANGEMENT FOR PHOTOSENSITIVE ARTICLES

Franz Ertl, Munich; Adolf Fleck, Unterhaching, and Nikolaus Jelinek, Munich, all of Fed. Rep. of Germany, assignors to Afga-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,329

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1981, 3124688

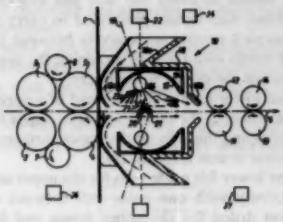
Int. Cl.³ F26B *23/04*

U.S. Cl. 34—4 32 Claims

1. drying arrangement, particularly for strips and sheets of photosensitive material, comprising:

(a) means defining a predetermined path for an article to be dried, said path including a drying zone having an upstream portion and a downstream portion; and

(b) means for drying the article in said zone, said drying means including a radiant heating element, and a reflector for directing radiant energy from said element towards said path, and said reflector being designed to diffuse the radiant energy over the length and width of said zone in such a manner that the amount of radiant energy directed



towards said path decreases from said upstream portion towards said downstream portion.

4,485,566

TUMBLER DRYER FOR THE DRYING OF LAUNDRY

Alain Vivares, Landau, Fed. Rep. of Germany, assignor to Ranco Incorporated, Dublin, Ohio

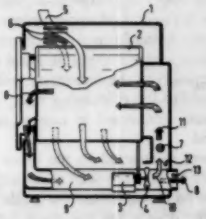
PCT No. PCT/EP81/00033, § 371 Date Nov. 23, 1981, § 102(e) Date Nov. 23, 1981

PCT Filed Apr. 24, 1981, Ser. No. 325,421

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1980, 3015428

Int. Cl.³ F26B *21/10*

U.S. Cl. 34—44 7 Claims



1. A tumble dryer for drying laundry or the like, comprising a drum supported in a housing and driven by a motor, heating means for heating air entering the drum, first and second temperature sensing means for sensing the temperatures of the air led into the drum and being discharged from the drum, and control means connected to the temperature sensing means for energizing and de-energizing the heating means and the drum motor, characterized in that the air is guided over and around the drum for preheating before passing the heating means, that the first temperature sensing means is arranged for sensing the temperature of the preheated air upstream of the heating means and that the control means de-energizes the heating means upon reaching a first presettable temperature difference of the preheated and the discharged air and de-energizes the motor upon reaching a second temperature difference of the preheated and the discharged air.

4,485,567

DRYER FELT RUN

Donald A. Ely, Roscoe, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Sep. 29, 1982, Ser. No. 426,609

Int. Cl.³ F26B *13/08*

U.S. Cl. 34—115 8 Claims

1. A web dryer for the thermal removal of moisture from a traveling web comprising in combination

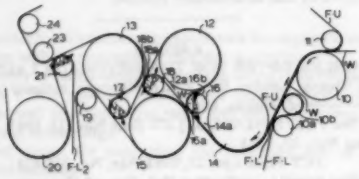
a plurality of rotatably mounted upper dryer drums adapted

to be heated to carry a web and evaporate moisture therefrom;

a plurality of rotatably mounted lower dryer drums adapted to be heated to carry the web and evaporate moisture therefrom; said drums positioned to carry the web in a sinuous path passing successively between the upper and lower drums with the web wrapping the upper and lower surfaces of the drums respectively;

upper and lower looped felts formed of a pervious material accommodating the escape of water vapor from the web and wrapping the web on the upper surfaces of the upper and lower drums respectively;

upper and lower felt guide rolls for the upper and lower felts respectively with one guide roll between each pair of adjacent drums for the upper drums and for the lower drums; said lower felt guide rolls positioned to carry the



portion of the lower felt between the adjacent lower drums into the spaces between the lower drums;

said upper felt guide rolls positioned to carry the the portions of the upper felt between adjacent upper drums into the spaces between said upper drums;

said guide rolls being formed of perforate roll shells;

glands inside of said roll shells dividing the shells into a first portion exposed to the oncoming web and a second portion exposed to the offrunning web;

pressure means connected to one of said portions of said glands; and

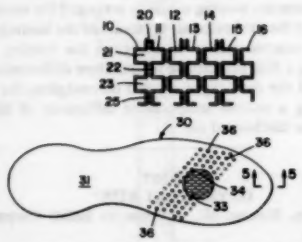
vacuum means connected to the other of said portions of said glands so that the web is subjected to pressure and vacuum in its travel across the guide roll and the spaces between the drums and the guide rolls are subjected to pressure and vacuum.

4,485,568

INSOLE

Curtis L. Landi, and Susan L. Wilson, both of 10215 Parkwood Dr., Cupertino, Calif. 95014

Filed Mar. 25, 1983, Ser. No. 478,672
Int. Cl.³ A43B *13/38, 13/18, 13/14*
U.S. Cl. 36—44 **6 Claims**



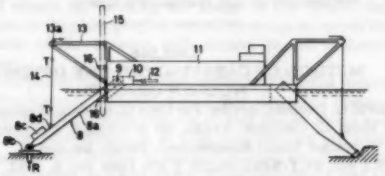
1. A sole comprising a pad, an element supporting said pad comprising a honeycomb made of resilient material and having one set of double walls, said honeycomb being overexpanded in a direction perpendicular to the double walls and being fixed beneath said pad with the length of the double walls extending across the short direction of the sole.

4,485,569

SPUD ARRANGEMENT FOR A DREDGE

Hiroshi Matsumae; Hisayoshi Myojin, and Sumitada Morishita, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed May 6, 1983, Ser. No. 492,335
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—73 **8 Claims**



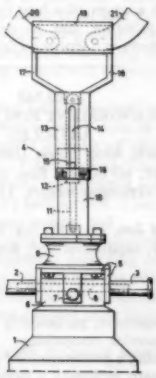
1. In a working vessel of the type including a vessel body, a working apparatus at one end of the vessel body and a turning shaft member at an opposite end of the vessel body, the improvement comprising: said turning shaft member disposed only at said opposite end and comprising an arm shaft extending toward the bottom of the sea from the vessel body at a downward inclination angle; a lowermost end member connected to a lower end of said arm shaft and adapted to penetrate the bottom of the sea; said arm shaft being pivotally connected to the vessel body by a horizontally extending shaft at an upper end of said arm shaft; a gantry fixedly mounted on the vessel body at said opposite end; a wire extending downward from said gantry and connected to said arm shaft for supporting said arm shaft and thereby tensioning said wire.

4,485,570

APPARATUS FOR MOUNTING A DRILLING MACHINE ON AN EXCAVATOR BUCKET

John T. Sonerud, Vintervägen 30, S-824 00 Hudiksvall, Sweden

Filed Jun. 6, 1983, Ser. No. 501,029
Claims priority, application Sweden, Jun. 21, 1982, 8203847
Int. Cl.³ E02F *3/96*
U.S. Cl. 37—117.5 **13 Claims**



13. An apparatus for mounting a drilling machine on an excavator bucket comprising:

a. first and second elastic means connected in alignment between said drilling machine and said excavator bucket

for taking up misalignment, shock and compression stresses between the excavator bucket and the drilling machine in conjunction with drilling;

b. said connection including coupling means and remotely controlled gripping means for gripping said coupling means for detachably connecting the drilling machine in one of at least two possible positions.

4,485,571
HOT AIR RECOVERY SYSTEM FOR A LAUNDRY MANGLE

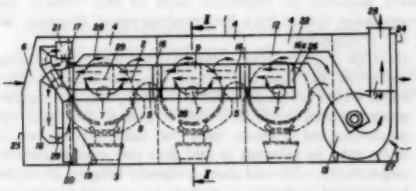
Johannes Berger; Wolfgang Blechschmidt, and Christian Wolff, all of Karl-Marx-Stadt, German Democratic Rep., assignors to Veb Kombinat Textima, Karl-Marx-Stadt, German Democratic Rep.

Filed Nov. 8, 1982, Ser. No. 448,454

Claims priority, application German Democratic Rep., Nov. 27, 1981, 235194

Int. Cl.³ D06F *67/08*

U.S. Cl. 38—14 **8 Claims**



1. In a heated trough mangle comprising a frame, at least one mangle unit located inside the frame and including a mangle cylinder with a perforated mangle surface and at least one heated mangle trough partially surrounding the mangle cylinder, an exhaust device with an exhaust air channel to withdraw exhaust air from inside the mangle cylinder to outside through the exhaust air channel, an air supply device to supply fresh air and having an air providing device, and an apparatus to transfer the heat from one air stream into another air stream, the improvement comprising: the frame including a sealed mangle chamber,

each mangle unit having a heat exchanger with first and second flow chambers,

the first flow chamber of the heat exchanger being connected at one end to the mangle cylinder and connected at the other end to the exhaust device through the exhaust air channel,

the second flow chamber of the heat exchanger being connected to the air supply device and forming a continuous fresh air supply channel, the air providing device of the air supply device terminating adjacent to the mangle cylinder so that the fresh air is continuously heated and supplied to the mangle unit to dry laundry pieces.

4,485,572
WAIST EXPANDER FOR TROUSER FINISHER

Leonard Frushtick, Denver, N.C., assignor to Leonard Automatics, Inc., Denver, N.C.

Filed Sep. 16, 1983, Ser. No. 532,793

Int. Cl.³ D06F *71/28*

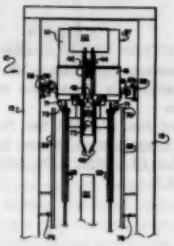
U.S. Cl. 38—42 **9 Claims**

1. A trouser presser, comprising a frame, a stationary center buck mounted on the frame, side chests mounted on the frame on either side of the center buck and moveable between a retracted position in spaced-apart relation from the center buck and a pressing position against the center buck, with a front operator access opening forward of the center buck, and a waist expander assembly mounted on the frame and alternately moveable between a dressing position forward of the center buck and a pressing position over the center buck, said waist expander assembly comprising:

(a) a front waist buck having front and opposing side surfaces for receiving and engaging the front torso part of a pair of trousers;

(b) a rear waist buck having rear and opposing side surfaces for receiving and engaging the rear torso part of a pair of trousers with the trousers encircling said front and rear waist bucks;

(c) means for alternately moving said front and rear waist bucks relatively towards and away from each other to



respectively define a closed position where the trousers are held loosely around the front and rear waist bucks and an open position for holding the trousers in a tensioned condition for being pressed;

(d) the opposing side surfaces of the front and rear waist bucks being parallel to each other and in the same vertical plane to collectively define opposing, planar pressing surfaces for the opposite sides of the trousers; and

(e) the upper extent of said side chests defining planar pressing surfaces for making surface-to-surface pressing contact against said opposing side surfaces of said front and rear waist bucks.

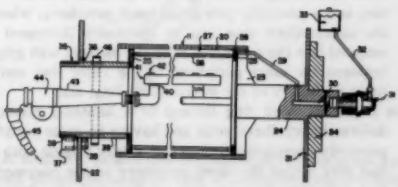
4,485,573
FLAT WORK IRONING ROLL WITH STRESS RELIEVING AXIAL EXPANSION SUPPORT

Eduard Kamberg, Chicago, Ill., assignor to New Super Laundry Mach. Co., Inc., Chicago, Ill.

Filed Sep. 27, 1982, Ser. No. 424,109

Int. Cl.³ D06F *67/02*

U.S. Cl. 38—44 **3 Claims**



1. A laundry flatwork finisher comprising,

(a) an elongated hollow roller providing a polished circumferential outer finishing surface,

(b) means for rotating said roller about a horizontal axis,

(c) a circumferentially extending fluid cavity behind said finishing surface,

(d) a supply-expansion tank for supplying a heat transfer medium into said fluid cavity through a rotary union,

(e) a stationary heat source within said hollow roller for heating said heat transfer medium in said cavity as the same rotates about its horizontal axis,

(f) means providing a fixed horizontal axis for one end of said roller and providing a free roller bearing at the opposite

end of said roller for permitting longitudinal axial movement of said roller relative to said fixed horizontal axis due to heat expansion of said roller, and

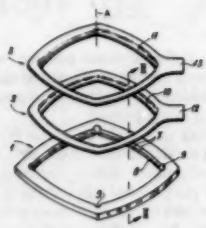
(g) said means providing a fixed horizontal axis for one end of said roller comprises a horizontal shaft connected to said roller and extending out of one end thereof, and with said free roller bearing at the opposite end of said roller comprising a rotatable supporting cam upon which freely rotates a cam ring provided by said opposite end of said roller.

4,485,574

THREE-SECTION HOOP EMBROIDERY FRAME

Remy J. P. Bennetot, Pont Sainte-Marie, France, assignor to Societe Industrielle de Decoration et Application S.I.D.A., Troyes, France

Filed Jan. 27, 1983, Ser. No. 461,502
Claims priority, application France, Feb. 5, 1982, 82 02268
Int. Cl.³ D05C *9/04*; D06C *3/08*
U.S. Cl. 38—102.2 **12 Claims**



1. A hoop for holding a piece of textile and a backing web for embroidery on the textile piece, the hoop comprising:

a generally rigid outer ring formed of a limitedly elastically deformable synthetic resin and having a generally polygonal inner periphery generally centered on an axis and being formed of slightly inwardly concave sides each having a central inwardly directed ridge;

an L-section intermediate ring formed of a limitedly elastically deformable synthetic resin and having an outer periphery generally complementary to and axially fittable with limited play within the inner periphery of the outer ring and a generally polygonal inner periphery, whereby the intermediate ring can be elastically deformed and snapped into the outer ring with the backing web gripped between the inner periphery of the outer ring and the outer periphery of the intermediate ring; and

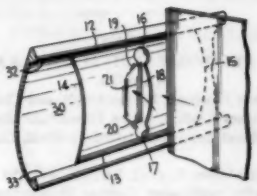
an L-section inner ring formed of a limitedly elastically deformable synthetic resin and having an outer periphery generally complementary to and axially fittable with limited play within the inner periphery of the intermediate ring, whereby the inner ring can be elastically deformed and snapped into the intermediate ring with the textile piece gripped between the outer periphery of the inner ring and the inner periphery of the intermediate ring, the intermediate and inner rings each having one flange forming the respective inner periphery and another substantially planar flange generally perpendicular thereto and extending outwardly perpendicular to the axis away from the respective inner flange, the inner flanges each forming a shallow outwardly open groove and the inner flange of the intermediate ring being formed with an inwardly projecting annular ridge, the ridges of the outer and intermediate rings fitting into the respective grooves of the intermediate and inner rings.

4,485,575

PRICE CHANNEL FLAG CLIP

Jacob J. Fast, 7561 NW. 9th St., Plantation, Fla. 33317

Filed Nov. 3, 1983, Ser. No. 548,240
Int. Cl.³ G09F *3/18*
U.S. Cl. 40—11 R **17 Claims**



1. A price channel flag clip for use in conjunction with a display structure having a price channel in the form of an elongated surface with elongated parallel first and second grooves disposed on respective sides of said surface, said grooves being spaced by a first predetermined distance, said flag clip comprising:

a sheet of resilient plastic material having a longitudinal centerline and first and second longitudinally-extending edges which are parallel and mutually spaced by a second predetermined distance which is greater than said first predetermined distance, such that said first and second edges may be retained in said first and second grooves, respectively, with said sheet resiliently bulging about said longitudinal centerline to present an exposed convex surface of said sheet forwardly of said structure, said sheet having first and second spaced through holes defined therein, said through holes having respective peripheral edges, said holes being aligned in a direction substantially perpendicular to said first and second edges, said sheet further including a first slit defined therethrough and extending from the peripheral edge of said first hole to the peripheral edge of said second hole, said sheet additionally including second and third slits extending from the peripheral edges of said first and second holes, respectively, on a first side of said slit, said second and third slits being displaced from said first slit at the peripheral edge of said first and second holes, respectively.

4,485,576

MESSAGE DISPLAY SIGN

William Greenberger, White Plains, N.Y., assignor to The Hopp Press Incorporated, New York, N.Y.

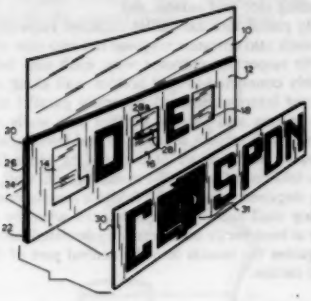
Filed Mar. 13, 1980, Ser. No. 130,006
Int. Cl.³ G09F *11/00*
U.S. Cl. 40—491 **5 Claims**

1. A message displaying sign comprising:

a first indicia-bearing panel including consecutively, a first opening, the letter "O", a second opening, the letter "E", and a third opening;

a second indicia-bearing panel positioned adjacent to said first panel and movable with respect thereto, said second panel being movable at least between a first position wherein a first set of indicia of said second panel is visible through said openings in said first panel such that the combined indicia of both panels convey the word "OPEN", and a second position such that the combined indicia of both panels convey the word "CLOSED", wherein said second panel indicia includes, consecutively, the letter "C", and arrow and a background for said arrow, and the letters "S", "P", "D", and "N", said second panel indicia being arranged in a straight line, said first panel indicia being arranged in a straight line, said first opening having a generally rectangular configuration with a small lateral extension giving it an "L" shape, said

first and second panels arranged such that when in the first position, the arrow and its background are seen through said first opening, said small lateral extension exposing an area of the second panel of the same color as the non-



indicia bearing portions of the first panel, and when said first and second panels are in the second position, the letters "CL" are visible through said first opening; and

means for mounting said panels such that said second panel is movable with respect to said first panel.

4,485,577

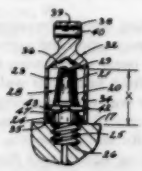
CAP COVER FOR PERCUSSION FIREARMS

R. Keith Lunders, P.O. Box 151, Elk River, Id. 83827

Filed Jul. 2, 1982, Ser. No. 394,549

Int. Cl.³ F41C *27/00*

U.S. Cl. 42—83 **12 Claims**



1. A protective nipple and cap cover for a percussion firearm having a breech and an exposed hammer thereon for forcibly striking a percussion cap mounted over the top end of a removable nipple threadedly engageable with the firearm breech, the cover comprising:

a rigid cover body defining a bore formed therein and extending from an open bottom end to a closed top end, to be received over the nipple and cap, with the closed top end between the cap and hammer and the open bottom end resting against the breech adjacent the nipple and with the closed top end spaced clear of the cap and nipple such that force of the hammer when striking is transmitted directly to the breech through the rigid cover body, clear of the cap and nipple to prevent unintentional discharge of the firearm; and

seal means at the open bottom end of the bore for hermetically sealing the cap and nipple within the cover bore.

4,485,578

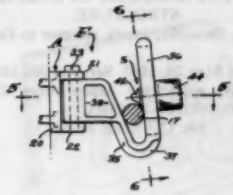
ADJUSTABLE SUPPORTS FOR FISHING RODS AND THE LIKE

Richard T. Novey, 1031 Linden Ave., Glendale, Calif. 91201

Filed Jul. 21, 1982, Ser. No. 400,344

Int. Cl.³ A01K *97/10*

U.S. Cl. 43—21.2 **12 Claims**



1. A support for the reception of a horizontally disposed diameter portion of a fishing rod and the like and comprised of an upwardly open V-shaped support member carried by a wall mounting bracket and having divergent upstanding legs with snubber means including a rack formed in one of said legs to receive a manually rotatable pinion positioned by the rack into vertical adjustment along said leg in opposition to the other leg and projecting from said leg to overlie and releasably engage with the diameter portion of the fishing rod to capture the same against the other leg.

4,485,579

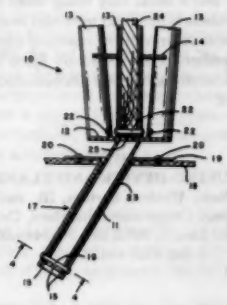
ROD HOLDER AND ALIGNMENT DEVICE

Robert L. Hawie, Stratford, Conn., assignor to The Hawie Manufacturing Company, Bridgeport, Conn.

Filed Sep. 15, 1983, Ser. No. 532,308

Int. Cl.³ A01K *97/10*

U.S. Cl. 43—21.2 **8 Claims**



1. A multi-rod holder and alignment device designed to be inserted within the receptor tube of a conventional rod holder on a boat and to engage the diametric alignment pin present adjacent the base of said tube, to adapt the rod holder to support a plurality of fishing rods in secured and aligned position, said device comprising an elongate support stem designed to be received within the receptor tube of a conventional rod holder and having diametrically-opposed longitudinal slots which open upwardly from the base of said stem to receive and engage said alignment pin, said elongate support stem having an upper end of sufficient length to extend up out of the rod holder, a plurality of spaced rod holders which are connected to the upper end of said support stem and which extend substantially vertically upwardly, each said spaced rod holder having an upper rod-receiving opening and a lower interior diametric rod-aligning pin designed to be received within the conventional transverse slot present at the butt end of a large

fishing rod, whereby said device is designed to be secured against rotation by engagement within the rod holder and to hold a plurality of fishing rods in rotation resistant substantially vertical alignment above said rod holder.

4,485,580

REEL MOUNT ASSEMBLY OF CYLINDRICAL STRUCTURE

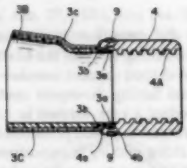
Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Japan

Filed May 20, 1982, Ser. No. 380,146

Claims priority, application Japan, May 22, 1981, 56-75110[U]; Sep. 10, 1981, 56-135048[U]

Int. Cl.³ A01K *87/06*

U.S. Cl. 43—22 **3 Claims**



1. In a reel mount assembly of cylindrical structure comprising a cylindrical body having a male thread over a predetermined range, a stationary sleeve mounted on one end and a slidable sleeve member slidingly mounted on the other end, a threaded annular member adapted to mate with said male thread, said slidable sleeve member and said annular member being rotatably coupled to each other in a male-female manner, said slidable sleeve member being slid by turning said annular member, the improvement comprising both said slidable sleeve member and said threaded annular member being formed of a plastic material, and a metal ring being fitted over the outermost of said members where said members overlap to provide a rigidity sufficient to prevent its outward expansion and the other of said members being resiliently fitted into said outermost member, whereby accidental disconnection of said members is prevented.

4,485,581

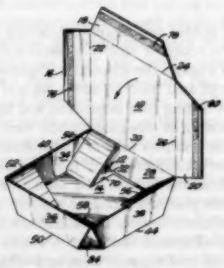
INSECT CAPTURING DEVICE AND BLANK THEREFOR

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 3, 1982, Ser. No. 446,206

Int. Cl.³ A01M *1/10*

U.S. Cl. 43—121 **11 Claims**



7. A paperboard carton formed from a single folded blank of paperboard material for trapping insects, comprising:

opposed top and bottom substantially rectangular walls disposed in spaced parallel relationship;

opposed pairs of parallel side walls foldably connected to and extending between said top and bottom walls, said side walls being configured to form entrance ways, between adjacent ones of said side walls said entrance ways extending into said carton; and

generally planar internal baffles disposed respectively adjacent each said entrance way and the two side walls forming the respective entrance way, each said baffle being foldably connected to said bottom wall along a fold line disposed intermediate and generally parallel to the side walls in one said pair of parallel side walls and being inclined with respect to said top and bottom walls, each said baffle including an edge extending generally parallel to the fold line of said baffle to said bottom wall, said edge being disposed adjacent the foldable connection between said top wall and one said side wall whereby each said baffle at least partly obstructs the associated entrance way and guides the insects into the central part of the paperboard carton.

4,485,582

INSECT FEEDING STATION

Edward Morris, Paramus, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 476,975, Mar. 25, 1983, abandoned, which is a continuation-in-part of Ser. No. 251,682, Apr. 6, 1981, abandoned. This application Nov. 2, 1983, Ser. No. 548,024

Int. Cl.³ A01M *1/20*

U.S. Cl. 43—131 **9 Claims**

1. In an insect feeding station for administering poison to insects comprising a base portion and a cover, said base portion comprising a floor, an outer wall having at least one opening, an inner spaced apart from said outer wall and having at least one opening, said inner wall opening being offset in a horizontal plane from said outer wall opening, said inner wall forming an inner compartment for said poison, the improvement which comprises a second floor below said floor, said outer walls extending to said second floor, at least one opening in said second floor, at least one opening in said floor within said inner wall and offset from said opening in said second floor.

4,485,583

FLEA-VACUUM

Audrey Planty, P.O. Box No. 2785, La Jolla, Calif. 92038

Filed Jul. 26, 1982, Ser. No. 401,618

Int. Cl.³ A01M *1/06*

U.S. Cl. 43—139 **3 Claims**

1. A self-contained vacuum device for the removal and disposal of fleas from household pets, comprising;

a. a hand held aspirator forming a handle having an open suction area at one end,

b. a vacuum generator powered by a ½ horsepower electrical motor attached to the aspirator by a plastic hose constructed with spiral steel wire reinforcement,

C. said aspirator having a compartment inside the handle for inserting and removing a retainer bag, said retainer bag

having a flap-type flea trap attached thereto for preventing fleas from escaping from the retainer bag,

d. said compartment in the aspirator handle being provided with hinge-pins, a door connected to said hinge-pins for opening and closing said compartment, and a latch to secure said door when closed,

e. said vacuum generator being provided with an on/off switch for the control of electrical power,

f. the aspirator being further provided with a quick-disconnect type fitting inside the handle for the insertion/detachment of said flea-trap retainer bag,

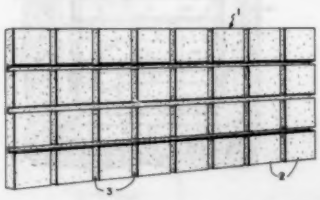
g. said open suction area of said one end of said aspirator being provided with a sliding latch for the purpose of securing in place a comb retained in said one end of said aspirator.

4,485,584

IGNITABLE FUEL AND FIRE STARTING COMPOSITION

James Raulerson, and Thomas J. Raulerson, both of Macclenny, Fla., assignors to Raulerson Products Manufacturing Company, Inc., Macclenny, Fla.

Filed Aug. 12, 1983, Ser. No. 522,698
Int. Cl.³ C10L *9/10*
U.S. Cl. 44—66 **6 Claims**



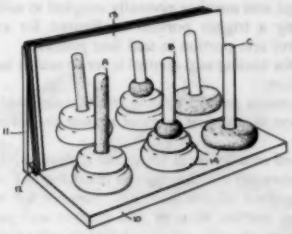
1. A fuel composition in the form of a three dimensional combustible matrix comprising a combustible cellulosic material, impregnated with an impregnating liquid comprising from about 88% to about 94% of a paraffin wax, from about 2% to about 6% of a motor oil, from about 2% to about 3% of a mineral oil, and from about 2% to about 3% of an animal fat, the percentages of each of the components of said impregnating liquid being by weight, based on the total weight of said impregnating liquid.

4,485,585

MULTIPLE-POST TOY STACKER ASSEMBLY

Wendell Shackelford, Warren, N.J., and Dwight G. Watkins, Youngstown, Ohio, assignors to Childcraft Education Corporation, Edison, N.J.

Filed May 3, 1982, Ser. No. 374,057
Int. Cl.³ A63H *33/00*
U.S. Cl. 446—117 **4 Claims**



1. A toy stacker assembly comprising:

A. a baseboard having a plurality of posts anchored thereon at equi-spaced positions along a single straight line and a back rest parallel to the line;

B. a plurality of rings of different size and color which fit on the posts in any desired sequence to create a stack of rings on each post whose pattern depends on the size and color of these rings and the sequence in which the rings are stacked on the post; and

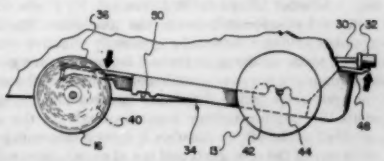
C. a series of colored pictures each showing the same posts with a stack of rings on each post of different size and color in a predetermined pattern, thereby forming a set of patterns, each picture displaying a different set of patterns, whereby a selected picture may be displayed to a player who is then required to replicate on the posts the set of patterns displayed thereby, said pictures appearing on cards each containing a respective picture, which cards are placeable behind the posts at a position parallel to the line wherein the set of patterns on the cards are in the same scale as the set of patterns created by the player on the posts to provide a mirror image thereof when the card is displayed is placed behind the posts, said cards lying against said backrest, said baseboard having a longitudinal channel to accommodate the cards.

4,485,586

SHIFTING MECHANISM FOR TOY VEHICLE

Wayne R. Halford, Manhattan Beach, and William J. Kelley, Torrance, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 3, 1982, Ser. No. 345,297
Int. Cl.³ A63H *17/00*
U.S. Cl. 446—448 **11 Claims**



1. In a toy vehicle, the combination comprising:
a control lever having a control arm portion;
vehicle speed changing drive means responsive to actuation

of said control arm portion from a first position to at least one other position;

at least one non-driven wheel member coupled to said vehicle for rotation in response to movement of the vehicle on a surface;

a cam disc member coupled for rotation in response to rotation of said at least one wheel member, said cam disc member having a generally spiral groove in a surface thereof;

a linkage arm member pivotally coupled to said vehicle and having a trigger portion configured for engaging said control arm portion in said first position;

means for biasing said control lever to said at least one other position;

detent means on said vehicle for retaining said control arm portion in said first position against the force of the bias; and

a pointed cam follower integrally formed with said linkage arm member and having the point thereof coacting with the groove of said cam disc member for enabling said trigger portion to urge said control arm portion out of engagement with said detent means under force of the bias to said at least one other position during pivoting of said linkage arm member for effecting vehicle speed changing during travel of said vehicle on a surface.

4,485,587

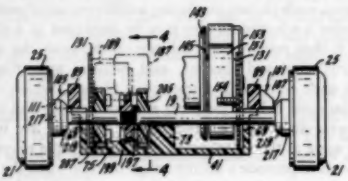
REVERSING MECHANISM FOR A TOY MOTOR DRIVEN WHEELED VEHICLE

Gordon A. Barlow, and John R. Krutsch, both of Glenview, Ill., assignors to Gordon Barlow Design, Skokie, Ill.

Filed Jan. 7, 1983, Ser. No. 456,584

Int. Cl.³ A63H *17/40*

U.S. Cl. 446—442 **11 Claims**



1. A reversing mechanism for a toy motor driven wheeled vehicle having a driven axle with attached wheels supported on a chassis, the axle being supported on the chassis so that it is shiftable laterally relative to the chassis, the reversing mechanism including:

means to shift the driven axle laterally relative to the chassis between forward and reverse driving positions upon engagement of the front or rear of the vehicle with a firm obstructing object,

a pair of spur gears positioned on the driven axle and spaced in generally fixed relation to each other with each gear freely rotatable on the driven axle and the driven axle freely slidable through the gears,

a clutch member affixed to the driven axle for rotation therewith and positioned between the spur gears, the clutch member having rotationally oppositely effective one-way clutch teeth on the sides thereof facing the spur gears,

complementary one-way clutch teeth formed on the sides of the spur gears facing the clutch member and engageable with the complementary one-way teeth on the clutch member as the clutch member is moved into engagement with one of the spur gears and out of engagement with the other spur gear upon lateral shifting of the driven axle to one of the forward and reverse driving positions, and

a toy vehicle motor and a pair of oppositely rotatable idler gears driven by the toy vehicle motor, each idler gear meshing with one of the spur gears to thereby drive the driven axle through the spur gear that is in engagement with the clutch member.

4,485,588

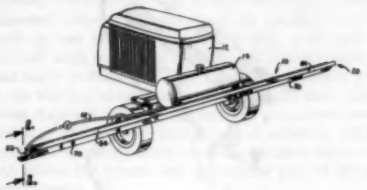
WIPER BAR SYSTEM

Roger W. Reed, 5107 Whitehead Rd., Hillsboro, Mo. 63050

Filed Jun. 20, 1983, Ser. No. 506,200

Int. Cl.³ A01G *13/00*

U.S. Cl. 47—1.5 **10 Claims**



1. A wiper bar for transferring liquid to vegetation upon contact therebetween comprising:

a fluid housing having a fluid channel therein;

an elongated plate having a surface for closing said channel;

a wick member having a first portion interposed between said channel and said plate member and a second portion extending from said first portion and about an opposed surface of said plate for contact with said vegetation;

means for communicating said liquid to said channel thereby moistening said first portion of said wick; and

means for adjusting the degree of closure of said channel afforded by said plate surface to control the amount of said liquid flowing from said channel and onto said first wick portion whereby to control the amount of said fluid available for flow to said second portion of said wick.

4,485,589

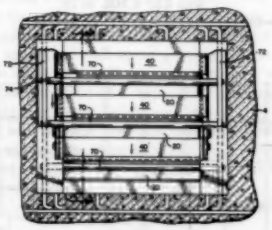
CONTROLLABLE DETENTION WINDOW

Wilfredo Rodriguez-Torres, Rio Piedras, P.R., assignor to Architectural Affiliates, San Juan, P.R.

Filed Aug. 26, 1982, Ser. No. 411,872

Int. Cl.³ E06B *7/02*

U.S. Cl. 49—38 **3 Claims**



1. A window assembly for controlling rainwater, light, ventilation and access through the masonry wall of a building, comprising:

(a) a rectangular frame having a hollow jamb at each side, a sill and a header parallel to the sill, all defining a central opening.

(b) a plurality of fixed horizontal slats arranged in vertically spaced relation within the window opening, each of which is permanently connected to the jambs at its ends,

(c) each of the fixed slats comprising a vertical part, a first horizontal part extending inwardly of the window from the upper edge of the vertical part, and a second horizon-

tal part extending outwardly of the window from the lower edge of the vertical part,

(d) a weep channel in the base of the jamb positioned to receive rainwater passing over a fixed slat, and a weep hole through the jamb and below the channel to pass rainwater from the channel to the exterior of the jamb,

(e) a plurality of movable slats extending horizontally across the central opening of the frame in vertically spaced relation each having a part at each end extending into the adjacent jamb through an elongated vertical opening in the jamb thereby permitting vertical sliding movement within the frame,

(f) each of said movable slats being normally positioned in horizontal alignment with a fixed slat and being C-shaped in cross section with a vertical part having approximately the same height as the vertical part of the adjacent fixed slat, and two horizontal flanges extending outwardly of the window from the upper and lower edges of the vertical part, respectively, the lower horizontal flange being positioned above and spaced from the outwardly extending flange of the aligned fixed slat.

(g) a single means in each jamb for simultaneously moving the movable slats, comprising a vertical rod within each jamb connected to all of the movable slats, and operating handles connected to the vertical rods and projecting to the exterior of the jambs through elongated vertical opening therein, and

(h) a plurality of vertically spaced horizontally tool steel detention bars extending across the window opening with their ends within the jambs, each bar being horizontally aligned with and inside of a fixed slat.

4,485,590

DOOR AND FRAME MOLDED OF FIBROUS MINERAL MATERIAL

Wesley E. Legg, Bexley; Russell L. Ault, Newark; Richard A. Mott, Alexandria, and Alan R. Leewood, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 24, 1983, Ser. No. 460,324
Int. Cl.³ E06B *3/00*
U.S. Cl. 49—501 **6 Claims**

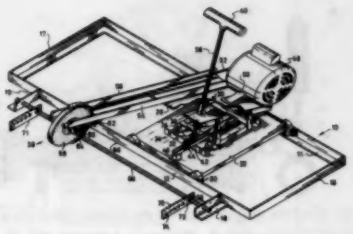
1. A door comprising fabricated fibrous mineral material impregnated with a binder resin, molded into the shape of a door, provided in selected hinge, doorknob, and lock areas with a plurality of spaced holes extending at least most of the way therethrough from one side thereof, and further impregnated on outer surfaces thereof with resin in addition to the binder resin, the additional resin filling said holes and impregnating the molded mineral material adjacent said holes.

4,485,591

BLADE GRINDING MACHINE FOR REEL TYPE MOWERS

Robert L. Bolin, 1311 Burrow St., Humbolt, Tenn. 38343

Filed Apr. 1, 1982, Ser. No. 364,532
Int. Cl.³ B24B *3/42*
U.S. Cl. 51—48 HE **8 Claims**



1. A portable grinding machine for the refurbishing of the cutting edge of a bed knife cutting element of reel type mowing units without removing said mowing units from mowing areas, which comprises:

base means including transverse guide members substantially parallel to said bed knife;

a transport carriage supported on said guide members of said base means and adapted for back and forth movement along the length of said guide members;

a grinding means carried by said carriage including a rotatable grinding wheel, means for rotating said grinding wheel about its axis of rotation, and an adjustable arcuate guide proximate a portion of the periphery of said grinding wheel to contact said bed knife during said back and forth movement of said carriage along said guide members to position said periphery of said grinding wheel relative to said cutting edge of said bed knife;

adjustable bed knife support means releasably connected to said base means, said bed knife support means having

a pair of braces fixedly joined to and extending from said base means in the plane of said base means and in a direction perpendicular to said transverse guide members, said braces being provided with an aperture proximate the outer ends thereof;

a longitudinal rod received in said apertures of said braces;

a pair of pivotal arms carried by said rod and movable along the length of said rod between said braces, said pivotal arms being provided with apertures;

a support releasably attached to each of said pivotal arms, said support comprising an extension oriented along and attachable to said pivotal arm, a transverse stop carried at a first end of said extension, a generally upright arm having a first end attached to a further end of said extension, and an adjustment bolt carried by said upright arm at a second end, whereby said transverse stop, said extension and said adjustment bolt support said bed knife with said cutting edge of said bed knife directed toward said grinding wheel; and adjustment means connected between said carriage and

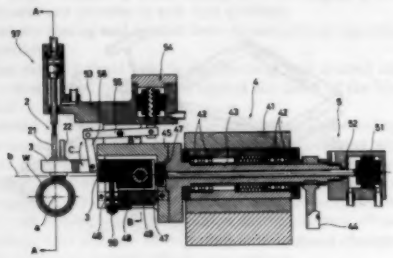
said grinding means to position said grinding wheel relative to said cutting edge of said bed knife.

4,485,592

MACHINE FOR SUPERFINISHING ANNULAR WORKPIECES

Kizo Kawaguchi, and Teruo Matsuda, both of Toyonaka, Japan, assignors to Osaka Seiki Kabushiki Kaisha, Osaka, Japan

Filed Sep. 10, 1982, Ser. No. 416,707
Claims priority, application Japan, Dec. 23, 1981, 56-213507
Int. Cl.³ B24B 9/00
U.S. Cl. 51—58 **14 Claims**



1. A machine for superfinishing an annular workpiece having a radially outwardly facing outer surface, comprising:

a. means for rotating the annular workpiece about a first axis of rotation;

b. a holder having means for holding a plurality of honing stones in alignment along a second axis perpendicular said first axis in mutually fixed spacial relationship to each other;

c. means, coupled to said holder, for selectively bringing any one of said plurality of honing stones into contact with the outer surface of the annular workpiece; said bringing means including:

(1) a slide unit including an inner shaft extending longitudinally, parallel said second axis, having a first end and a second end, fixed adjacent said second end to said holder and movable longitudinally, parallel said second axis, and

(2) means, fixed to said inner shaft, for driving said inner shaft longitudinally so as to move said holder and the plurality of honing stones along said second axis;

d. a holder unit, slidably supporting said slide unit for longitudinal movement relative thereto; and

e. means for oscillating said holder unit in a direction perpendicular said second axis, said holder unit engaging said slide unit so as to oscillate said holder when said holder unit is oscillated by said oscillating means.

4,485,593

GRINDING MACHINE FOR CRANKSHAFT PINS

Rudolf Münzing, Frankfurt am Main, and Dieter Lehmann, Dreieich, both of Fed. Rep. of Germany, assignors to Naxos-Union Schleifmittel und Schleifmaschinenfabrik, Fed. Rep. of Germany

Filed May 21, 1982, Ser. No. 381,007
Claims priority, application Fed. Rep. of Germany, May 30, 1981, 3121609
Int. Cl.³ B24B 5/42, 41/00
U.S. Cl. 51—105 SP **10 Claims**

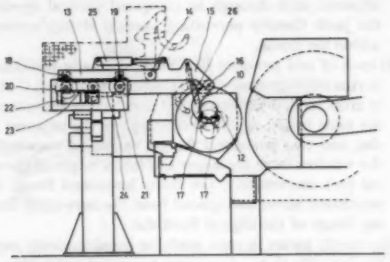
1. A grinding machine for pins of heavy crankshafts on which a crankshaft is eccentrically mounted in a rotatable clamping arrangement at both ends, a first pin of the crankshaft to be ground being located in a rotational center of the clamping arrangement where the first pin can be ground with a grinding head of a cylindrical grinder, said grinding machine comprising:

at least one relief arrangement for the crankshaft for supporting an eccentrically rotating main bearing of the crankshaft:

said main bearing rotating eccentrically with constant, vertically applied force by said relief arrangement counteracting the dead weight of the crankshaft at said main bearing;

said relief arrangement including at least one relief bow for supporting the main bearing of the crankshaft;

said relief bow being provided with a suspension point essentially rotating in a location vertically above said main bearing and synchronously with equal eccentricity as the main bearing;



said suspension point being provided on a pivot arm;

said pivot arm being mounted on a support arm by a joint; and

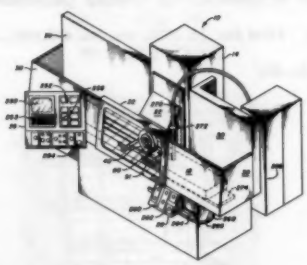
said support arm being guided by at least one eccentric cam, said eccentric cam rotating synchronously with the crankshaft.

4,485,594

SURFACE GRINDING MACHINE

Raymond J. Guertin, East Greenwich; Chuhong Kang, North Kingston, and Peter P. Matthews, West Warwick, all of R.I., assignors to Brown & Sharpe Manufacturing Company, North Kingston, R.I.

Filed Sep. 7, 1982, Ser. No. 415,137
Int. Cl.³ B24B 49/00
U.S. Cl. 51—165.71 **34 Claims**



34. A surface grinding machine comprising:

a base;

a table moveable along said base in a first direction;

a column moveable along said base in a second direction normal to said first direction toward and away from said table;

a wheel housing disposed within said column and including a rotatable grinding wheel for performing work on a workpiece disposed on said table;

means for moving said table horizontally on said base;

means for moving said column horizontally on said base;

means for moving said wheel housing vertically within said column toward and away from said table;

pre-programmable computer means for controlling operation of said table moving means, said column moving

means and said housing moving means and for monitoring operation thereof;

a manually operated control panel for controlling operation of said table moving means, said column moving means, and said housing moving means, operation of each of said table moving means, said column moving means and said housing moving means of said surface grinding machine being selectively controlled by one of said pre-programmable computer means and said manually operated control panel; and

means for permitting manual sliding of said control panel horizontally along said base from a position remote from said table to a position adjacent to said table.

4,485,595

GRINDING AND POLISHING APPARATUS

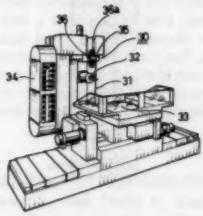
Toshimasa Minamiyama, Amagasaki, and Haruo Arahori, Yamatotakada, both of Japan, assignors to Fuji Kuuki Kabushiki Kaisha, Osaka, Japan

Filed Jun. 6, 1983, Ser. No. 501,244

Claims priority, application Japan, Aug. 31, 1982, 57-151963

Int. Cl.³ B24B *49/16*

U.S. Cl. 51—165.92 **3 Claims**



1. A grinding and polishing apparatus comprising

a machining center main body,

a tool attaching spindle secured to said machining center main body and having a tool mounting bore in the middle and a passage communicating with said tool mounting bore for feeding compressed air to drive an air grinder,

said air grinder having a base portion shaped to fit in said tool mounting bore and to be thereby attached to the latter and adapted to be driven by fluid being fed from said compressed air feed passage, and

air feed control means for starting supply of fluid to said compressed air feed passage after the base portion of said air grinder is fitted in said tool attaching bore and stopping said supply of fluid immediately before the air grinder is removed from said tool mounting bore.

4,485,596

TWIST DRILL POINT SPLITTING/WEB THINNING APPARATUS

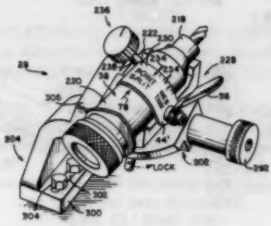
David A. Bernard; Richard A. Bernard, and William C. Christian, all of Ashland, Oreg., assignors to Darex Corporation, Ashland, Oreg.

Filed Sep. 9, 1982, Ser. No. 416,281

Int. Cl.³ B24B *19/00*

U.S. Cl. 51—219 R **2 Claims**

1. A fluted twist drill point splitting and web thinning apparatus for use with a rotary grinding wheel comprising: a standard to be mounted adjacent a rotary grinding wheel, a cross feed shaft having a first end attached to the standard and projecting in a horizontal direction from the standard, a cross-feed table, two pairs of boss portions on the under side of the cross-feed table and between each pair of boss portions space to receive said cross-feed shaft, a pair of bearing plates connecting the pairs of boss portions across said shaft and mounting said cross-feed table to the cross-feed shaft for rotation about the cross-feed shaft and sliding movement on the shaft, a coil spring mounted on the cross-feed shaft between the said bearing plates and urging the cross-feed table away from said standard, threads on a second end of the cross-feed shaft opposite said first end, a cross-feed knob threaded on the cross-feed shaft and engaging the cross-feed table whereby rotation in one direction of the cross-feed knob moves the cross-feed table linearly in one direction and rotation of the cross-feed knob in



the other direction results in the coil spring moving the table linearly in the opposite direction, a drill chuck supporting element, means for releasably holding a drill chuck to the drill chuck supporting element, and means mounting the drill chuck support element for limited rotation on said cross-feed table, and further including a stop member mounted on an upper end of the standard off-axis from said cross-feed for limiting rotation of said cross-feed talbe about said cross-feed shaft.

4,485,597

FRAME WORK JOINTS

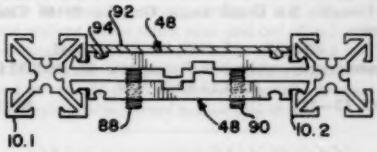
Anthony C. Worrallo, 15 Sprott Rd., Auckland 5, New Zealand

Filed Sep. 16, 1982, Ser. No. 418,656

Claims priority, application New Zealand, Sep. 18, 1981, 198408; May 4, 1982, 200513

Int. Cl.³ F16B *7/04*

U.S. Cl. 52—36 **20 Claims**



1. An apparatus, comprising:

first and second spaced apart, non-coaxial members, each of the members having an opening bounded by wall parts;

a pair of substantially identical arms extendable between said members, each of said arms having first and second end portions engagable within said openings of said first and second members, respectively, one arm being the mirror image of the other arm;

teeth on said end portions engagable behind said wall parts of said members to prevent withdrawal of said arms from said openings; and

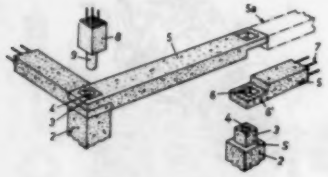
clamping means for forcing said arms apart and into engagement with said wall parts.

4,485,598

PREFABRICATED ELEMENTS AND ROOMS FOR THE QUICK CONSTRUCTION OF BUILDINGS AND BUILDING WORKS IN GENERAL

Eustachio Guardiani, Via della Corte, 6, 65100-Tocco Casauria (Pescara), Italy

Continuation of Ser. No. 118,675, Feb. 5, 1980, abandoned. This application Jul. 6, 1982, Ser. No. 395,440
Claims priority, application Italy, Feb. 5, 1979, 44205 A/79
Int. Cl.³ E04H 1/00
U.S. Cl. 52—79.1 10 Claims



1. A kit of constructional elements permitting the quick construction of a building, said elements comprising:

a plurality of plinths adapted to be located in an excavation at a building site to provide a foundation for a building, each of said plinths having (a) a base portion, (b) a first extension which is unitary with said base portion and has a first cross-section, and (c) a second extension which is unitary with said first extension and has a quadrangular cross-section, said quadrangular cross-section having an area which is less than the area of said first cross-section,

bearing beams adapted to fit over said second extensions for support on said first extensions, each of said bearing beams having quadrangular apertures in each end thereof of substantially the same dimension as said quadrangular cross-section of the second extension,

unitary prefabricated modules adapted to be positioned on said bearing beams, said modules including upper and lower substantially horizontal surfaces and vertical perimeter surfaces which interconnect said horizontal surfaces to define a hollow volume therein; and

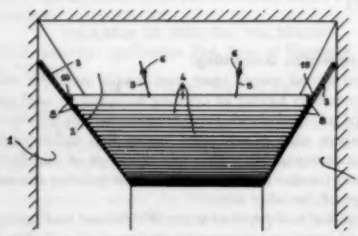
joint means on the ends of said second extensions for engaging said prefabricated modules when said prefabricated modules are positioned on said bearing beams.

4,485,599

PROCESS FOR MAKING A FALSE CEILING AND FALSE CEILING MADE BY CARRYING OUT SAID PROCESS

Guy Perradin, Le Grand Logis, Guereins 01140 Thoissey, France

Filed Mar. 15, 1983, Ser. No. 475,581
Claims priority, application France, Mar. 18, 1982, 82 04801
Int. Cl.³ E04B 5/57
U.S. Cl. 52—222 10 Claims



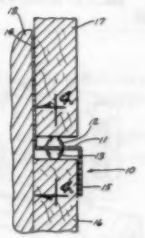
4. False ceiling made by a series of parallel strips of fabric of reduced width, reinforced transversely and oriented vertically in a mean horizontal plane located at an appropriate height below the ceiling of the construction, the ends of these strips being rendered fast with appropriate mechanisms adapted to ensure tensioning thereof between fixed points of the premises, wherein said false ceiling comprises an individual tensioning mechanism for each of these strips so that it can be tensioned independently of those which surround it.

4,485,600

COMPRESSIBLE SPACING AND SEALING APPARATUS FOR SIDING PANEL JOINTS

Jerome A. Olson, 14162 Pine, Omaha, Nebr. 68144

Continuation-in-part of Ser. No. 322,385, Nov. 27, 1981, and a continuation-in-part of Ser. No. 338,320, Jan. 11, 1982. This application Feb. 12, 1982, Ser. No. 348,494
Int. Cl.³ E04D 1/36
U.S. Cl. 52—62 9 Claims



1. A flashing apparatus for spacing and sealing adjacent panels comprising:

a central portion lying substantially in one plane and having a front edge and a rear edge;

first upwardly extending flange connected to and extending from the rear edge of said central portion;

a secondly downwardly extending flange connected to and extending from the front edge of said central portion; and

an improvement comprising:

a plurality of projection means extending from said plane for resiliently spacing said siding panels apart, adjacent ones of said projection means alternatively extending upwardly and downwardly near the longitudinal center of the central portion and substantially evenly spaced apart along a substantial length of said central portion, each of said projection means being rigidly connected to said central portion about the entire periphery thereof along said plane whereby said central portion between adjacent projection means can flex to allow for expansion or contraction of the panels disposed on opposing sides thereof;

a first wooden panel disposed underneath said central portion and having a top planar surface therein in abutment with said downwardly extending projection means and having said second downwardly extending flange extending parallel to a front top edge thereof;

a second wooden panel disposed above said central portion and having a bottom planar surface in abutment with said upwardly extending projection means and also having a lower rear portion thereof in abutment with said first upwardly extending flange; and

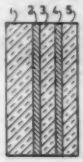
a wooden stud in abutment with said first upwardly extending flange and with the top rear portion of said first wooden panel whereby expansion of said first and second panels due to varying moisture content and temperature changes is permitted without causing buckling of said first and second wooden panels.

4,485,601

FIRE SCREENING GLAZING PANELS

Marcel De Boel, Chatelet, Belgium, assignor to Glaverbel, Brussels, Belgium

Filed Apr. 15, 1982, Ser. No. 368,623
Claims priority, application United Kingdom, Apr. 21, 1981, 8112396
Int. Cl.³ B32B 17/06
U.S. Cl. 52—232 19 Claims



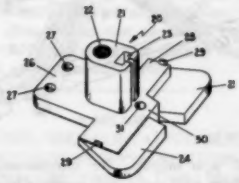
1. A fire screening glazing panel comprising at least two flat vitreous sheets and at least one layer of intumescent material sandwiched directly between two of said vitreous sheets to form a vitreous sheet-intumescent layer-vitreous sheet panel, characterized in that a first one of said two vitreous sheets between which said layer of intumescent material is sandwiched has a thickness of at least 6 mm and is thicker than the other one of said two vitreous sheets, said panel being arranged to be installed with said thicker sheet positioned between said layer of intumescent material and the expected origin of a fire.

4,485,602

WALL PANEL POSITIVE ALIGNMENT DEVICE

Donald R. Flamboe, Jr., and David L. VanderKooi, both of Holland, Mich., assignors to Trendway Corporation, Holland, Mich.

Filed Sep. 29, 1982, Ser. No. 428,156
Int. Cl.³ E04H 1/00
U.S. Cl. 52—239 9 Claims



1. A wall panel positive alignment device for vertically aligning adjacent wall panels wherein the wall panels have top and bottom and side edges, with side channels being rigidly mounted on the side edges and terminating at bottom ends at lower corners of the panel, the adjustement device being adapted to be mounted in the lower corner of one wall panel to engage an identical alignment device in an adjacent wall panel, the alignment device comprising:

a central vertical mounting column adapted to be mounted at the bottom end of the side channel;

a pair of horizontal, vertically offset alignment ledge including an upper ledge and a lower ledge extending in front of said mounting column and horizontally spaced from each other; the upper ledge having a bottom surface and the lower ledge having a top surface, the plane of the bottom surface of the upper ledge being adjacent to the plane of the top surface of the lower ledge;

horizontal wall panel rear support ledge extending to the rear of said mounting column and adapted to rest on the bottom edge of the panel;

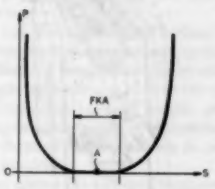
a horizontal side support ledge extending from the side of said column on the top, rear of said lower alignment ledge, the top surface of said side support ledge being in the same plane as the plane of the top surface of said upper alignment ledge; and at least one anti-rotation rib extending upwardly from the top surface of said upper ledge or said side support ledge sized to engage a corresponding slot in the bottom of said channel.

4,485,603

INSULATING GLASS WINDOW STRUCTURE

Paul Derner, Gelsenkirchen, and Dietrich Mertin, Witten, both of Fed. Rep. of Germany, assignors to BFG Glassgroup, Paris, France

Division of Ser. No. 253,297, Apr. 13, 1981, Pat. No. 4,416,101.
This application May 20, 1983, Ser. No. 496,450
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1980, 3014207
The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.
Int. Cl.³ E04C 1/42
U.S. Cl. 52—398 5 Claims



1. An insulating window structure comprising:

an inner glass pane;

an outer glass pane;

a frame including means for spacing said panes apart, said frame extending around the periphery of said panes to define therein a gas-filled space; and

means including at least one yieldable, compressible and resilient strip between at least one of said panes and said frame so as to enable the displacement of said one of said panes toward and away from the other of said panes, said means including said strip having a spring characteristic in which restoring force against said one of said panes is plotted along an ordinate and displacement of said one of said panes is plotted along the abscissa of a graph which has a horizontal portion centrally of said characteristic, said resilient means acting upon said one of said panes at a working point of said characteristic lying along said horizontal portion whereby force resisting displacement of said one of said panes remains substantially constant during displacement thereof against said strip.

4,485,604

MODULAR BUILDING ELEMENTS WHICH FORM WHEN ASSEMBLED A NETWORK OF CONGLOMERATE OR REINFORCED CONCRETE TO FORM A BEARING STRUCTURE WHICH IS ALSO ANTI-SEISMIC

Rocco Palamara; Giovanni Palamara, and Bruno Palamara, all of Colle Palombara, 00039 Zagarolo/Roma, Italy

Filed Aug. 26, 1982, Ser. No. 411,698
Claims priority, application Italy, Mar. 9, 1981, 47978 A/81; European Pat. Off., Mar. 9, 1982, 82830050
Int. Cl.³ E04B 2/00
U.S. Cl. 52—436 32 Claims

1. Modular building elements in any material to realize a flat and/or vaulted anti-seismic bearing structure which requires no reinforced concrete framework of pillars and beams and

which is self-sufficient whether made of strong modular elements or not since in either case the modular elements are symbiotically bonded to the internal network they form, characterized by:

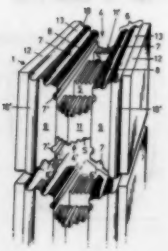
groove and coping devices (13,13';10,10';2,2') to seal conglomerate inside the structure;

inclined planes (6,6') running continuously along both longitudinal and vertical faces from said grooves (13,13';2,2') toward the inside, to form free spaces between overlaid elements in which the conglomerate takes form;

a continuous horizontal channel (4,4') along the center line underneath said inclined planes (6,6'), in each of said longitudinal faces;

continuous seams (7) along each of said planes (6,6') on the horizontal longitudinal faces, as devices to anchor the side-by-side elements to one another and to the network when the conglomerate is poured;

prehensile teeth (8,8') parallel to said seams (7), to contribute to the intimate bond between elements and network;



continuous seams (7') along the vertical walls of each of said continuous horizontal channels (4,4') as devices to anchor the overlaid elements to one another and to the network when the conglomerate is poured;

pronounced seams (S) along the bottom and top of said horizontal channels, to form in said free spaces and in said channels, horizontal seams of the network when the conglomerate is poured;

continuous inclined planes (9) from said groove and coping devices (10,10') toward the inside along both transverse faces, to form vertical free spaces between the side-by-side elements, in which the conglomerate takes form;

a tongue (11) between the two said inclined planes (9) from said groove and coping devices (10,10') along one of the transverse faces and a corresponding cavity (11') between the planes (9) of the opposite face; and

continuous channels (5) made vertically to said horizontal channels (4,4') in which, after assembling and pouring of the conglomerate, the vertical seams of the network are formed.

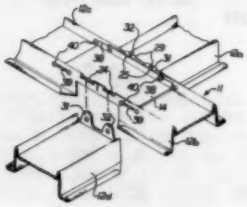
4,485,605

SUSPENSION CEILING GRID WITH REMOVABLE GRID MEMBERS

Paul D. LaLonde, Lorain, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Filed Feb. 6, 1981, Ser. No. 232,195
Int. Cl.³ E04B 5/52
U.S. Cl. 52—665 **11 Claims**

1. A suspension ceiling grid system comprising a plurality of runner assemblies adapted to be installed as units in said grid system, each assembly including a plurality of endwise aligned runner members, each assembly having identical first connections at each end and identical second connections at a location spaced from its ends, said first and second connections having a different structure, connector means releasably connecting said endwise aligned runner members of each assembly with sufficient strength and rigidity to permit the handling of each assembly as a unit prior to and during installation thereof in said grid, said first connections of an assembly being connectable with said second connections to form a grid in which associated assemblies extend substantially perpendicular to each other, said connector means and individual runner mem-



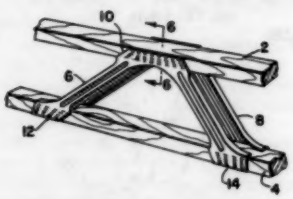
bers being removable and replaceable in an assembled grid without substantial disassembly of said grid, said first connections being operable to connect to both runner members of said pair of runner members, said first connections being releasable from one runner without releasing the other member of a pair of runner members.

4,485,606

TRUSS STRUCTURES CONSTRUCTED WITH METAL WEB MEMBERS

Robert Gottlieb, Miami, Fla., assignor to Gang-Nail Systems, Inc., Miami, Fla.

Filed Jan. 7, 1982, Ser. No. 337,671
Int. Cl.³ E04C 3/292
U.S. Cl. 52—694 **18 Claims**



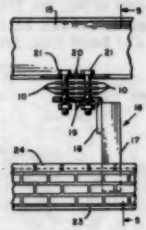
1. A metal web member for interconnecting elongated wooden members, said metal web member having a V-shaped metal web member comprising: connector plates located at the apex and at each of the extremities of said V-shaped metal member, each connector plate having struck out therefrom a plurality of teeth, all of said teeth extending from the same face of said metal web member; a leg member connected between each of said connector plates at each of said extremities and said apex, each of said legs having at least one groove formed therein, said groove extending from the same side of said metal web member as said teeth so that said teeth can be pressed into corresponding wooden members by a roller rolling over said web member and each of said legs having side flanges extending on both sides thereof for the entire length of said leg and extending in the same direction as said groove; the depth of each said groove varies along its length with said groove being larger in its cross-section at its ends than at its center and the depth of each said flange varies along its length with said flange being deeper at its center than at its ends; and, said flanges and said groove of each leg being formed with appropriate depths to sufficiently increase the rigidity of said metal web member for avoiding bending of said leg when subjected to normal compressive loads.

4,485,607

METHOD OF SHIMMING SPACED MEMBERS

Terry L. Nelson, Fairfield, Conn., assignor to The Leake & Nelson Co., Bridgeport, Conn.

Division of Ser. No. 410,244, Aug. 23, 1982, abandoned. This application Jan. 20, 1984, Ser. No. 572,502
Int. Cl.[3] E04B *1/00*
U.S. Cl. 52—741 8 Claims



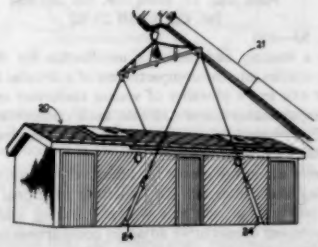
1. A method for shimming the spacing between two members which are to be attached to each other by a pair of bolts, the centers of which are spaced by any one of three standard distances, which comprises providing pairs of identical thin, flat, rectangular shim elements of uniform thickness, each having a single slot which extends parallel to the side edges thereof in a direction perpendicular to the width of said shim element and which is offset relative to the center of said shim element so as to form a uniformly wide leg extension along one side edge of said slot and a uniformly narrow leg extension along the other side edge of said slot, the width of said slot being greater than the thickness of said bolts, aligning pairs of said shim elements in edge-by-edge contact, with the slots extending parallel to each other and in the same direction, in any one of three positions in which the narrow leg extensions are adjacent or a narrow leg extension is adjacent a wide leg extension or the wide leg extensions are adjacent, to space the centers of the slots of each pair of aligned shim elements from each other by any one of three standard distances corresponding to the distance between the centers of said pairs of bolts, inserting one or more pairs of aligned shims between said members to be shimmed so that each said bolt is received within a said slot, and tightening said bolts to attach said members in shimmed relation to each other.

4,485,608

PREFABRICATED, SELF-CONTAINED BUILDING AND METHOD OF CONSTRUCTION

Charles E. Kaufman, Old Greenwich, Conn.; Marvin R. Shetler, Scotts Mills, Oreg., and William M. Sharp, Stamford, Conn., assignors to Restroom Facilities Corporation, Reno, Nev.

Filed Jul. 13, 1982, Ser. No. 397,919
Int. Cl.[3] E04G *21/14*; E04B *1/348*
U.S. Cl. 52—745 15 Claims



1. A method for constructing a floorless pre-assembled, relocatable building in an off-site factory which is capable of being transported to a building site, raised from the transportation means and lowered into position on a substantially level, monolithic concrete foundation slab, said method comprising the steps of:

A. constructing a first, self-supporting, wall member comprising a fully interconnected, unitized, assembly formed from a plurality of stud-interconnected, securely joined plank members, all of which are interconnected by rigidifying sheathing, and having a length equal to the entire, overall, outside dimension of one side of the building, said first wall member being constructed by

1. forming a bottom frame portion by nailing and gluing three rows of elongated plank members in stacked, secure, mounted abutting engagement with each other, the middle row of elongated plank members comprising an overall length greater than the overall length of the adjacent two rows of plank members, thereby forming tenons at each end of said bottom frame portion,
2. nailing and gluing a plurality of stud-forming plank members at their terminating ends to the plank members forming the top row of the bottom frame portion, with said stud-forming plank members being positioned substantially perpendicularly to the elongated bottom frame portion,
3. forming a top frame portion by nailing and gluing two rows of elongated plank members in stacked, securely mounted abutting engagement along substantially their entire length, with the top row of the elongated plank members having an overall length greater than the overall length of the adjacent underlying row of plank members, thereby forming tenons at each end of said top frame portion,
4. nailing and gluing the opposed terminating end of the plank members extending perpendicularly from the bottom frame portion to the plank member forming the lower row of the top frame portion; and
5. nailing and gluing sheathing material to at least one side of the stud-forming plank members forming the wall member, with the top portion of the sheathing material substantially covering the two rows of plank members forming the top frame portion and with the bottom portion of the sheathing material substantially covering the entire three rows of plank members forming the bottom frame portion;

B. constructing a second, self-supporting wall member comprising a fully interconnected, unitized, assembly formed from a plurality of interconnected, securely joined plank members, all of which are interconnected by rigidifying sheathing and having a length equal to the entire, overall, outside dimension of one side of the building, the second wall member being constructed by

1. forming a bottom frame portion by nailing and gluing three rows of elongated plank members in stacked, secure, mounted abutting engagement with each other, the middle row of the elongated plank members comprising an overall length less than the overall length of the adjacent two rows of plank members, thereby forming mortise zones at each end of said bottom frame portion,
2. nailing and gluing a plurality of stud-forming plank members at their terminating ends to be plank members forming the top row of the bottom frame portion, with said stud-forming plank members being positioned substantially perpendicularly to the elongated bottom frame portion,
3. forming an top frame portion by nailing and gluing two rows of elongated plank members in stacked, securely mounted abutting engagement along substantially their entire length, with the top row of elongated plank members comprising an overall length less than the overall length of the adjacent underlying rows of plank members, thereby forming mortise zones at each end of said top frame portion,

4. nailing and gluing the opposed terminating ends of the stud-forming plank members extending perpendicularly from the bottom frame portion to the plank members forming the lower row of the top frame portion portion, and

5. nailing and gluing sheathing material to the plank members forming a wall member, with the top portion of the sheathing material substantially covering the two rows of plank members forming the top frame portion and the bottom portion of the sheathing material substantially covering the entire three rows of plank members from the bottom frame portion;

C. securely interconnectedly affixing two of the tenons along one side of the first wall member to two of the mortises along one side of the second wall member by nailing and gluing said tenons in said mortises;

D. constructing a third wall member substantially identically to the first wall member;

E. constructing a fourth wall member substantially identically to the second wall member;

F. interconnecting and securely affixing said third wall and said fourth wall member to the interconnected, first and second wall members by nailing and gluing the mating tenons and mortises thereof;

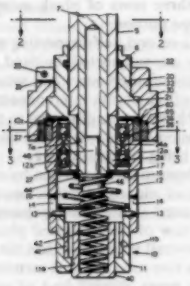
G. securely affixing a roof means to the top plank row of the top frame portion,

thereby obtaining a floorless, pre-assembled, relocatable building constructed in an off-site factory, ready for being transported to a building site, raised from the transportation means, and lowered into position on a concrete, substantially level, monolithic foundation and slab, without causing any degradation to the building structure.

4,485,609
TORQUE LIMITED CAP APPLICATING HEAD

Samuel J. Kowal, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 28, 1981, Ser. No. 335,291
Int. Cl.³ B67B *3/20*; B65B *7/28*
U.S. Cl. 53—331.5 **6 Claims**

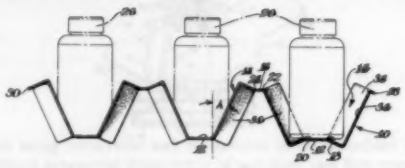


1. A limited torque cap applicator comprising, in combination, a power driven rotatable first element, a cap applicating assemblage incorporating a rotatable second element adapted to be coupled with and driven by said first element, means for magnetically coupling said first and second elements together for limited torque driving of the second element comprising a ring of peripherally spaced permanent magnets mounted on one of said elements and a concentric ring constructed of high magnetic permeability material mounted on the other of said elements, said ring of magnets and said concentric ring of said magnetic material being located radially adjacent each other such that one annularly surrounds the other for transmitting torque to said second element limited by the magnetic attraction between the ring of permanent magnets and the concentric ring of high magnetic permeability material.

4,485,610
ACCORDIAN FOLD PACKAGING TRAY

James E. Gilley, Fairfield, Conn.; Henry R. Vigue, and Wesley C. Sanborn, both of Waterville, Me., assignors to Keyes Fibre Company, Waterville, Me.

Continuation-in-part of Ser. No. 275,865, Jun. 22, 1981, abandoned. This application Jan. 12, 1983, Ser. No. 457,371
Int. Cl.³ B65B *5/00, 5/02, 7/02*
U.S. Cl. 53—452 **6 Claims**



1. A process for packaging a plurality of articles in separate compartments for shipment and storage, comprising the steps of: (A) providing a tray having a first deeply contoured shape including at least two longitudinal rows of article receiving compartments with at least two such compartments in each row, each compartment having article engaging sidewall areas, the tray in the first shape having no vertical walls so that a number of like empty trays may be nested one within another in a stack, the tray in the first shape being capable of receiving and retaining articles in the compartments, and (B) providing in the tray at least one predetermined first longitudinal fold line along the bottom of each row of compartments and at least one predetermined second longitudinal fold line along an upper surface of the tray between each row of compartments; (C) applying a horizontal compressing force to change the dimensions of the tray from the first shape to a final shape wherein the width of the tray is decreased, the dimension changes occurring in accordian fold fashion around the first and second fold lines, the amount of folding around each fold line to change the tray from the first shape to the final shape being no greater than about 30°; (D) placing articles in the compartments, either before or after the dimensions of the tray are changed from the first shape; and finally (E) securing the tray in the final shape whereby the articles packaged in the tray are contacted by the article engaging sidewall areas of the compartments.

4,485,611
ADJUSTABLE AUTOMATIC TRAY LOADING AND INDEXING MECHANISM

Robert D. Fuller, Minneapolis, Minn., assignor to Slide Shooters, Inc., Minneapolis, Minn.

Filed Aug. 18, 1981, Ser. No. 293,954
Int. Cl.³ G03B *23/02*
U.S. Cl. 53—501 **13 Claims**

1. In a loading and indexing mechanism for successively loading articles into the compartments of a circular tray having a center axis and a plurality of vacant uniformly spaced adjacent compartments about said axis, each compartment having an axially oriented opening the combination comprising:

an article insertion station;

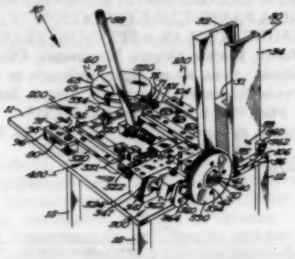
rotatable mounting means for selectively engaging said tray along said center axis for imparting rotational movement to said tray at said axis whereby during said rotational movement consecutive adjacent compartments move into registration with said insertion station;

detent means for stopping rotation of and holding said rotatable mounting means at consecutive angular positions

corresponding to adjacent compartments being in registration with said article insertion station;

insertion means operably coupled with and synchronized with said rotatable mounting means and said detent means for axially inserting an article present at the insertion station into the axially oriented opening of a compartment in registration with said insertion station;

feed means for delivering consecutive articles to said insertion station as articles are inserted in said compartments by the insertion means;



rotating means operably coupled to the rotatable mounting means and cooperating with and synchronized with said insertion means and detent means for rotating said rotatable mounting means in small angular increments between consecutive angular positions so that consecutive articles may be inserted; and

braking means operably coupled to said rotating means for preventing free spinning of said rotating means when said detent means are disengaged from said rotatable mounting means.

4,485,612

APPARATUS FOR MANIPULATING ROLLS OF CONVOLUTED PAPER OR THE LIKE

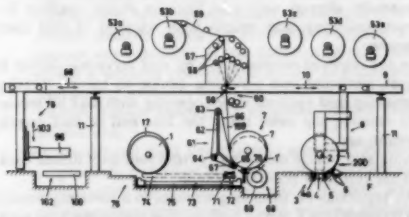
Stephan Piesen, and Joze Zajec, both of Krefeld, Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Dec. 22, 1981, Ser. No. 333,560

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049096

Int. Cl.³ B65B *57/14*

U.S. Cl. 53—504 **36 Claims**



1. In an apparatus for providing a series of substantially cylindrical rolls consisting of convoluted paper or the like and having coaxial recesses in the end faces thereof with inner discs which are placed adjacent to the end faces of the rolls, with blanks whose width exceeds the axial length of the rolls so that the marginal portions of the blanks extend beyond and can be folded over the respective inner discs, and with outer discs which are applied over the folded-over marginal portions of the blanks, the combination of a feeding unit having means for supplying successive rolls of said series to a predetermined location where the axes of the rolls are substantially horizontal; conveyor means spaced apart from said location and including a roll-removing conveyor; a lifting device for transferring successive rolls along a predetermined path from said location toward said conveyor means, comprising a pair of coaxial clamping means, means for moving said clamping means along said path, means for moving said clamping means toward and away from each other so that the clamping means can be introduced into the recesses of a roll at said location prior to transport of said clamping means toward said conveyor means and withdrawn from the recesses upon deposition of the roll on said conveyor means, and means for rotating a roll between said clamping means about the axis of such roll through the medium of at least one of said clamping means; and means for changing the orientation of successive rolls prior to transfer of such rolls onto said removing conveyor.

4,485,613

APPARATUS FOR PRODUCING TUBULAR-POUCH PACKAGES

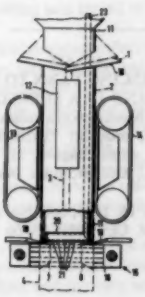
Walter Saur, Ditzingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 17, 1982, Ser. No. 358,987

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110482

Int. Cl.³ B65B *9/06*

U.S. Cl. 53—551 **6 Claims**

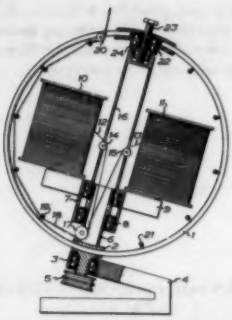


1. An apparatus for producing tubular-pouch packages having a device for shaping a tubular body out of a strip of packaging material capable of being secured together under pressure, said apparatus including a transverse-seam forming means for partitioning off individual pouch packages formed from said tubular body by flat-pressing a narrow area of said tubular body along a pressing plane and applying heat onto said transverse seam which seals said tubular body along the seam, and a nozzle positioned in a fixed position inside of said tubular body juxtaposed said transverse-seam forming means, said nozzle extending over substantially the entire width of said transverse seam formed in said tubular body and arranged to blow a cooling medium onto said transverse seam along its inside prior to movement of said transverse-seam forming means from said seam, and said nozzle being disposed at a short distance above said transverse-seam forming means and said nozzle including an outlet directed toward the pressing plane of said transverse-seam forming means for directing a coolant air flow onto said seam.

4,485,614
ROTATABLE FLYER

Mats E. G. Lindgren, Vikmanshyttan, Sweden, assignor to AB Kompositprodukter S.K.F.M., Vikmanshyttan, Sweden

PCT No. PCT/SE82/00007, § 371 Date Sep. 9, 1982, § 102(e) Date Sep. 9, 1981, PCT Pub. No. WO82/02454, PCT Pub. Date Jul. 22, 1982
PCT Filed Jan. 13, 1982, Ser. No. 422,899
Claims priority, application Sweden, Jan. 13, 1981, 8100144
Int. Cl.³ D07B 3/12; D01H 7/86
U.S. Cl. 57—58.52 6 Claims

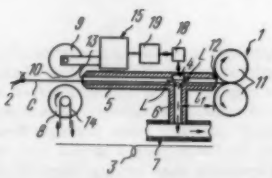


1. A rotatable flyer for use in a stranding machine in which two or more wires, fibers or strands are stranded together or to a cable, said flyer comprising: an annular frame; support means for rotatably supporting said frame for rotation about an axis of rotation passing through diametrically opposed points and said frame; and means carried by said frame to prestress said frame in a direction perpendicular to the centrifugal force produced by the rotation.

4,485,615
APPARATUS FOR PIECING YARN TO BROKEN END OF A FIBROUS STRAND IN A SPINNING MACHINE

Evgeny Y. Pigalev, 2 Moskovskaya ulitsa 29, kv. 26, Shuya; Juvenaly V. Pavlov, prospekt Textilschikov, 115, kv. 36; Alexandr S. Osipov, ulitsa Blagova, 21, kv. 17, both of Ivanovo, and Vladimir L. Kulikov, ulitsa Dmitrieva, 17, Ivanovo, all of U.S.S.R.

Filed Mar. 16, 1981, Ser. No. 243,800
Int. Cl.³ D01H 15/00
U.S. Cl. 57—261 7 Claims

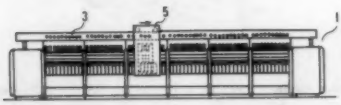


1. An apparatus for piecing twisted yarn to a broken end of a fibrous strand in a spinning machine, said apparatus comprising: a pulling device; a thread guide; means positioned between said pulling device and said thread guide for gripping and transferring the end of the yarn; a yarn breakage sensor operatively coupled to the gripping and transferring means; said gripping and transferring means operative for gripping and transferring the end of the yarn toward the pulling device; a pipe having an outlet opening connected to a source of reduced air pressure and a first inlet opening arranged in immediate proximity to the pulling device and a second inlet opening adjacent to said gripping and transferring means; said gripping means comprising a driving roller which is caused to rotate in the direction opposite to the direction of yarn delivery and a driven pressure roller spaced from said driving roller to define a clearance therebetween; and means coupled to the yarn breakage sensor for causing said driven roller to move toward said driving roller.

4,485,616
METHOD AND APPARATUS FOR SUPPLYING VACUUM TO A TRAVELING-TYPE SERVICING DEVICE SERVING A PARENT MULTI-STATION TEXTILE MACHINE SUCH AS A SPINNING FRAME

Takayuki Morita, Kariya; Shigeru Muramatsu, Okazaki, and Tatemi Fukuda, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Feb. 8, 1983, Ser. No. 464,915
Claims priority, application Japan, Feb. 10, 1982, 57-018898
Int. Cl.³ D01H 11/00, 15/00, 9/02
U.S. Cl. 57—261 8 Claims



1. A method for supplying vacuum to a servicing device which travels along a parent textile machine such as a spinning frame and provides a servicing operation to the respective stations of said parent machine, wherein vacuum is created in a duct means arranged along said stations, said duct means is provided with vacuum outlet openings corresponding to the individual stations of said parent machine and lid means rotatably supported for closing said vacuum outlet openings, and said servicing device includes a nozzle means communicable with said vacuum outlet openings, said method comprising the steps of:

moving said nozzle means to said vacuum duct means before said servicing device reaches a predetermined position at any one of said stations which is to be provided with a servicing operation by said servicing device;

rotating said lid means using the free end of said nozzle means traveling along with said servicing device so as to uncover the vacuum outlet opening for said one station;

stopping said servicing device at said predetermined position where said nozzle means on said servicing device is substantially aligned with said vacuum outlet opening for communicating said nozzle with vacuum in said duct means;

after the required servicing job by said servicing device is over, initiating said servicing device to travel, thereby covering said vacuum outlet opening with said lid means by rotating the same using the free end of said nozzle means; and

moving said nozzle means away from said duct means back to the retracted position thereof.

3. An apparatus for supplying vacuum to a servicing device which travels along a parent multi-station textile machine such as a spinning frame and provides a servicing operation to the stations of said parent machine, comprising:

a duct means arranged along said multiple stations of said parent machine, connected to any source of vacuum to create vacuum therein, and having respective vacuum outlet openings formed correspondingly to the individual stations and respective lid means for said vacuum outlet openings, each of said lid means being rotatably supported in such a way as to cover and uncover its associated vacuum outlet opening;

a nozzle means provided on said servicing device, movable to and away from said duct means, engageable with each

said lid means and also communicable with vacuum in said duct means via said vacuum outlet openings, said nozzle means having lid-engagement means thereon and each said lid means having nozzle-engagement means thereon for engagement with each other to positively urge each of said lid means during its said movement to cover and uncover its said associated vacuum outlet opening; and

means for actuating said nozzle means toward said duct means to align its said lid-engagement means for engagement with said nozzle-engagement means on said lid means as said servicing device travels and approaches any selected one of said stations and away from said duct means as said servicing device travels and moves away from said selected one of said stations.

4,485,617

FALSE-TWIST APPARATUS

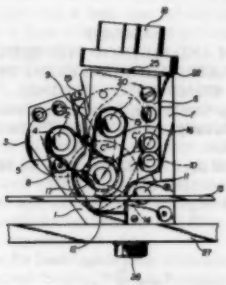
Günther Schmitt; Günther Oppl, both of Hammelburg; Kirit Patel, Elfershausen, and Theo Bieber, Oberwerrn, all of Fed. Rep. of Germany, assignors to Fag Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Filed Nov. 26, 1982, Ser. No. 444,628

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 3147088

Int. Cl.³ D02G *1/08*

U.S. Cl. 57—340 **8 Claims**



1. A false-twist apparatus comprising:

a first, a second and a third shaft parallel to one another;

support means forming first, second and third journal bearings rotatably engaging said first, second and third shafts, respectively, said support means including a first and a second member which are relatively swingable about a pivotal axis extending in the direction of said shafts between a working position and an idle position, said first and second members being provided with said first and second journal bearings at locations remote from said pivotal axis;

first, second and third sets of axially separated friction disks respectively carried on said first, second and third shafts in axially offset relationship, the disks of all three sets being overlappingly interleaved in said working position, the disks of said first and second sets being separated in said idle position for enabling the introduction of a yarn into a twisting region between said shafts;

coupling means positively interconnecting said first, second and third shafts in said working and idle positions; and

continuously operable drive means including a transport belt frictionally engaging a whorl on one of said shafts in said working position for jointly rotating said shafts through the intermediary of said coupling means, said whorl being automatically disengaged from said transport belt in said idle position.

4,485,618

APPARATUS FOR WITHDRAWING A THREAD FROM A SPINNING STATION

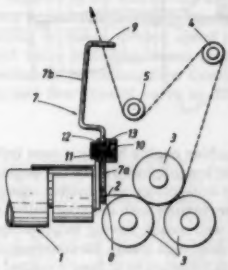
Rupert Anzinger, Traun, Austria, assignor to Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft, Leonding, Austria

Filed Nov. 16, 1982, Ser. No. 442,146

Claims priority, application Austria, Nov. 18, 1981, 4965/81

Int. Cl.³ D01H *1/12, 13/06*

U.S. Cl. 57—352 **4 Claims**



1. In an apparatus for withdrawing a thread from a spinning station and for delivering said thread to a winding station, the combination of

(a) a plurality of withdrawing rollers arranged to withdraw said thread from said spinning station,

(b) a thread traversing device arranged at the winding station to receive the thread from the withdrawing rollers and to impart to the thread received from the withdrawing rollers a traversing motion,

(c) a thread winding device arranged at the winding station to receive the thread from the traversing device, and

(d) a thread-guiding member consisting of a freely rotatably mounted lever, the lever having

(1) a first arm provided with a first thread guide reciprocable along the withdrawing rollers and arranged to guide said thread from said spinning station to said withdrawing rollers, and

(2) a second arm provided with a second thread guide arranged to guide said thread from said withdrawing rollers to said thread traversing device and to be angularly oscillated by said thread as the thread performs said traversing motion imparted to it by the traversing device.

3. In an apparatus for withdrawing a thread from a spinning station, the combination of

(a) a plurality of withdrawing rollers arranged to withdraw said thread from said spinning station, and

(b) a thread-guiding member consisting of a freely rotatably mounted lever, the lever having

(1) a first arm provided with a first thread guide reciprocable along the withdrawing rollers and arranged to guide said thread from said spinning station to said withdrawing rollers, and

(2) a second arm provided with a second thread guide arranged to guide said thread from said withdrawing rollers and to be angularly oscillated by said thread.

4,485,619
NOSE BULLET ANTI-ICING FOR GAS TURBINE ENGINES

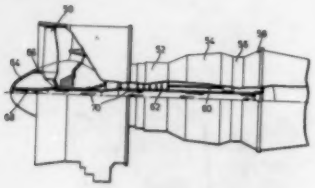
Alan Moore; Geoffrey E. Harman; David G. Rosser, and Edward F. Clapham, all of Briston, England, assignors to Rolls-Royce Limited, London, England

Continuation of Ser. No. 138,143, Apr. 7, 1980, abandoned. This application Sep. 9, 1982, Ser. No. 416,277

Claims priority, application United Kingdom, Apr. 17, 1979, 7913292

Int. Cl.³ F01D 5/08

U.S. Cl. 60—39.093 **14 Claims**



1. A gas turbine engine having a nose bullet which is rotatable about the longitudinal axis of the engine and a system for anti-icing the nose bullet, said system comprising, a chamber connected for rotation with the nose bullet, the chamber being defined by a wall means, having an upstream end and a downstream end, said wall means terminating adjacent to an upstream end wall formed by at least a central region of the nose bullet lying adjacent said axis, the wall means having a cross-sectional diameter along said longitudinal axis such that no selected cross-sectional diameter along said longitudinal axis is greater than any other cross-sectional diameter downstream thereof and said cross-sectional diameter of said upstream end being less than said cross-sectional diameter of said downstream end, said wall means extending downstream from the end wall for retaining gas within it which has been cooled by contact with said central portion of the nose bullet, and which is centrifuged radially outwardly due to rotation of the chamber, said wall means constraining the gas to flow downstream towards a relatively hotter region of the chamber thereby creating a thermosyphon effect in the gas in the chamber and inducing gas from said relatively hotter region of the chamber to flow towards, and impinge on, the end wall.

4,485,620
COOLABLE STATOR ASSEMBLY FOR A GAS TURBINE ENGINE

Robert J. Koenig, and Leonard W. Stevens, both of Vernon, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 3, 1982, Ser. No. 354,470

Int. Cl.³ F02C 3/00

U.S. Cl. 60—39.75 **14 Claims**

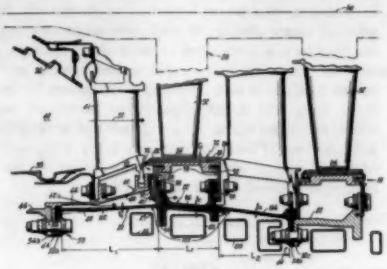
1. In a gas turbine engine of the type having a stator assembly which includes an outer case, an outer air seal circumscribing the tips of an array of rotor blades, and a means for attaching the outer air seal to the outer case, the outer case having a coolable rail assembly outwardly of the air seal extending circumferentially thereabout and first and second flanges for attaching the outer case to adjacent cases, the improvement which comprises:

an outer casing having

a first section integrally joined to the rail assembly which extends betwen the rail assembly and the first flange, the first section having a minimum cross-sectional area which is smaller than the minimum cross-sectional areal of the rail assembly;

a second section integrally joined to the rail assembly which extends between the rail assembly and the second flange, the second section having a minimum cross-sectional area which is smaller than the minimum cross-sectional area of the rail assembly;

wherein the first and second sections support and position the



rail assembly in the axial and radial direction from the first and second flanges and flexibly deform in the radial direction to enable thermal changes in the diameter of the rail assembly with respect to the upstream and downstream flanges.

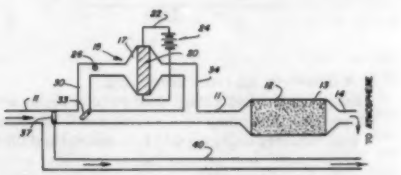
4,485,621
SYSTEM AND METHOD FOR REDUCING PARTICULATE EMISSIONS FROM INTERNAL COMBUSTION ENGINES

Victor W. Wong, Cambridge, Mass., and Zablon N. Mogaka, Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jan. 7, 1983, Ser. No. 456,485

Int. Cl.³ F01N 3/02

U.S. Cl. 60—274 **3 Claims**

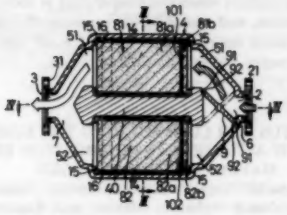


1. Apparatus for removal of particulates from exhaust gas emitted by an internal combustion engine which comprises a first gas flow conduit leading to the exhaust of an internal combustion engine and to a chamber containing means for removing particulates from exhaust gas, a second gas flow conduit connecting with said first gas flow conduit at a location upstream of said chamber containing means for removing particulates from exhaust gas, said second gas flow conduit connecting with a chamber containing an electrically conductive substrate material having an oxidation catalyst disposed therewith, a third gas flow conduit leading from said chamber containing the electrically conductive substrate material and connecting to said first gas flow conduit at a location upstream of said chamber containing means for removing particulates from exhaust gas, means for electrically heating said substrate material, means for introducing a combustible fuel into said chamber containing an electrically conductive substrate material and flow directing means for selectively directing flow through said first and second gas flow conduits.

4,485,622
EXHAUST GAS CLEANING DEVICE FOR INTERNAL COMBUSTION ENGINE

Shigeru Takagi, Anjo; Yukihisa Takeuchi, Aichi; Shigeru Kamiya, Chiryu; Masahiro Tomita, Anjo; Kiyohiko Oishi, Susono, and Kiyoshi Kobashi, Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Oct. 7, 1981, Ser. No. 309,409
Claims priority, application Japan, Oct. 9, 1980, 55-141794
Int. Cl.³ F01N *3/02*
U.S. Cl. 60—296 **9 Claims**



1. An exhaust gas cleaning device for collecting and burning particulates contained within exhaust gases discharged from an internal combustion engine, comprising:

a housing provided with an exhaust gas inlet port, an exhaust gas outlet port and at least one exhaust gas flowing passage which is formed between said ports so as to be communicated therewith;

at least one particulates collecting member for collecting particulates, said member being disposed in said exhaust gas flowing passage and being composed of two filter elements made of heat resistant material and having a large number of small open passages; said two filter elements having different heat capacities, said filter elements being disposed in series within said exhaust gas flowing passage with said filter element having smaller heat capacity being positioned upstream of said filter element having larger heat capacity; and

heating means for heating said filter elements and said particulates collected thereby, which is interposed between said filter elements so as to be closely contacted therewith;

said filter elements being formed of ceramic foamed bodies of different volumes;

4,485,623
VEHICLE HYDRAULIC SYSTEM WITH PUMP SPEED CONTROL

Willard L. Chichester, and George J. Trusock, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Aug. 10, 1981, Ser. No. 291,681
Int. Cl.³ F15B *11/16, 13/06*
U.S. Cl. 60—422 **2 Claims**

1. In a work vehicle of the type having at least first and second hydraulic load circuits,

said first circuit including a first manually actuable selector member operatively coupled with a first control valve and a first hydraulic motor operatively connected with a first utilization device and adapted to be energized through the first control valve,

said second circuit including a second manually actuable selector member operatively coupled with a second control valve, and a second hydraulic motor operatively connected with a second utilization device and adapted to be energized through the second control valve,

a single positive displacement hydraulic pump,

a changeable speed electric motor connected with the pump,

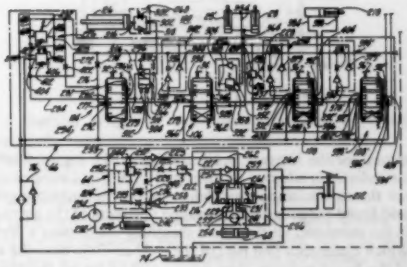
energizing means for energizing said electric motor,

said second hydraulic motor being operably at a higher value of hydraulic flow than said first hydraulic motor,

said pump being adapted to supply the hydraulic flow required by the second hydraulic motor when the electric motor is operated in a high speed range and to supply the flow required by the first hydraulic motor when the electric motor is operated in a low speed range,

the improvement comprising:

a priority demand valve having an inlet port connected with the pump, a primary outlet port connected with the first control valve, a secondary outlet port connected with the second control valve, and normally closed differential pressure responsive valve means between the inlet port and the secondary outlet port, said priority demand valve including means for supplying to the primary outlet port all of the flow required by the first circuit when the selector members are actuated individually or together with the pump running in either of said speed ranges, said priority demand valve including means incorporating a bypass check valve for permitting flow from the primary outlet port via said first control valve to the secondary



outlet port around said valve means when the pressure in the second circuit is less than that in the first circuit and including differential presure means for opening said valve means when the inlet flow exceeds that required by the first circuit with said first and second selector members actuated together, whereby the inlet flow in excess of that required by the first circuit is supplied to the secondary outlet port and thence to a second circuit,

and speed control means operatively connected with said energizing means and with one of said selector members for energizing the electric motor for operation in said high speed range when the second selector member is actuated and for energizing the electric motor in said low speed range when only the first selector member is actuated,

said speed control means including regulating means for maintaining the speed of the electric motor within first predetermined limits during operation in the high speed range and within second predetermined limits during operation in the low speed range,

whereby the first hydraulic motor is supplied with hydraulic fluid to operate the first utilization device regardless of whether the second selector member is actuated.

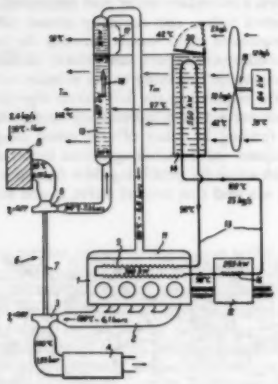
4,485,624
SUPERCHARGED INTERNAL COMBUSTION ENGINE EQUIPPED WITH AN AIR INTERCOOLING SYSTEM

Jean F. Melchior, 126 Bld de Montparnasse, 75 015 Paris, France

Filed Sep. 10, 1981, Ser. No. 300,953
Claims priority, application France, Sep. 19, 1980, 80 20174
Int. Cl.³ F02B *37/04*
U.S. Cl. 60—599 **16 Claims**

1. A cooling system for an internal combustion engine of the type having a low volumetric compression ratio and highly

supercharged by at least one turbocompressor so as to have a high mean effective pressure rating, said cooling system comprising a forced ventilation cooling system including at least one liquid radiator, at least one air radiator, and at least one device arranged to generate an air-flow through the two radiators and comprising pressure generating means cooperating with at least one sheathing which channels the air through said radiators, said two radiators and said pressure generating means being arranged in series, with respect to the air-flow, and wherein the liquid radiator is adapted to be part of a closed



circuit for the internal liquid cooling of the engine whilst the air radiator is adapted to form part of a direct cooling circuit for the supercharging air delivered by the turbocompressor, said liquid radiator being arranged upstream of the air radiator in the abovesaid air-flow, said sheathing comprising a first duct which channels a first part of the total air-flow onto the whole of the liquid radiator, then onto a part of the air radiator, and a second duct which channels the complementary portion of the total air-flow directly onto the remaining part of the air radiator, situated close to the supercharging air outlet of said air radiator.

4,485,625

CONTROL MEANS FOR INTERNAL COMBUSTION ENGINES

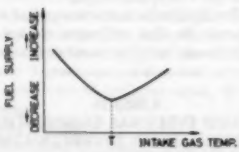
Misao Fujimoto; Shoso Ishii; Yoshikuni Yada, and Shigeki Imazu, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Apr. 14, 1982, Ser. No. 368,355

Claims priority, application Japan, Apr. 15, 1981, 56-57479; Jul. 2, 1981, 56-104222; Jul. 2, 1981, 56-104223

Int. Cl.[3] **F02B** *33/00;* **F02M** *7/00*

U.S. Cl. 60—601 **2 Claims**



1. A supercharged internal combustion engine including combustion chamber means, intake passage means having supercharging means and leading to said combustion chamber means, means for providing combustible air-fuel mixture which is to be charged to said combustion chamber means, ignition means for igniting the air-fuel mixture charged in the combustion chamber means, exhaust passage means extending from said combustion chamber means for exhausting combustion gas from said combustion chamber means, intake gas temperature sensing means for sensing temperature of intake gas passing through said intake passage means downstream of said supercharging means, fuel supply control means for controlling said air-fuel mixture means, said fuel supply control means including means for determining basic fuel quantity, modifying means responsive to the temperature of the intake gas to produce a modifying signal for decreasing fuel supply in response to an increase in the temperature of the intake gas when the temperature is below a predetermined value to maintain the air-fuel ratio of the mixture substantially constant, and enriching the mixture when the temperature is above the predetermined value, and means for determining the quantity of fuel supply based on outputs from said basic fuel quantity determining means and said modifying means.

4,485,626

APPARATUS FOR CONTROLLING THE IGNITION TIMING OF AN INTERNAL COMBUSTION ENGINE HAVING A TURBOCHARGER

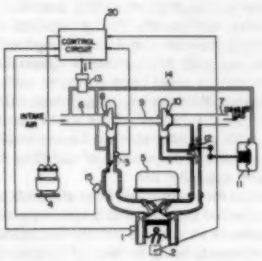
Koichi Moriguchi, Nagoya; Kenzi Iwamoto, Nishio; Hisasi Kawai, Toyohashi; Nobutaka Mizuno, and Yasuhiro Ikuta, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Apr. 27, 1982, Ser. No. 372,378

Claims priority, application Japan, Apr. 28, 1981, 56-64944

Int. Cl.[3] **F02B** *37/12;* **F02D** *37/02*

U.S. Cl. 60—602 **4 Claims**



1. An ignition timing control system for an internal combustion engine with a supercharger comprising:

means for detecting the rotational engine speed of the engine and generating an engine speed signal;

means for detecting the air pressure of the intake air flowing into said engine and generating an intake air pressure signal;

means for detecting the opening degree of a throttle valve pivotally disposed in the intake pipe of said engine and generating a throttle valve opening signal;

means for detecting knocking occurring in said engine and generating a knocking signal;

means for controlling the ignition timing of said engine in response to said engine speed signal and said intake air pressure signal;

means for decreasing the air pressure of the intake air between said supercharger and said engine when said knocking signal is generated; and

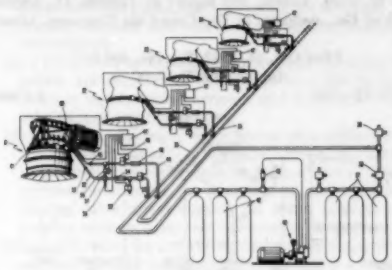
means for stopping ignition timing controlling by said controlling means in response to said knocking signal and to said throttle valve opening signal indicating that the opening degree of said throttle valve is kept constant, to thereby hold the ignition timing at such a value as was controlled by said ignition timing controlling means before said knocking signal was generated.

4,485,627

SOLAR ENERGY CONVERSION PLANT

Sten-Hakan Almström, Lund, Sweden, assignor to United Stirling AB, Sweden

Filed Apr. 18, 1983, Ser. No. 485,830
Int. Cl.³ F02G 1/04, 1/06
U.S. Cl. 60—641.14 4 Claims



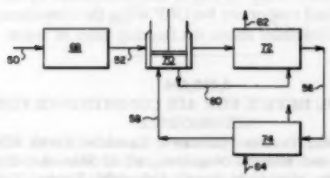
1. A solar energy conversion plant comprising a plurality of solar heated, closed-cycle hot gas engines, each engine being independently operable and being provided with a control system for introducing gas to or removing gas from its working gas charges; a common working gas supply system, said supply system including a high pressure working gas reservoir; a first tube main connected to be supplied working gas by said reservoir; a second tube main, wherein each engine control system is operatively connected to be supplied with high pressure working gas from said first tube main and to dump working gas to said second tube main; and a common, separately driven compressor operatively connected to deliver gas from said second tube main to said high pressure gas reservoir.

4,485,628

HIGH TEMPERATURE ENGINE AND SEAL

Dedger Jones, 885 Freeway Dr., N., Columbus, Ohio 43229

Filed Dec. 6, 1982, Ser. No. 447,267
Int. Cl.³ F02G 1/053
U.S. Cl. 60—650 28 Claims



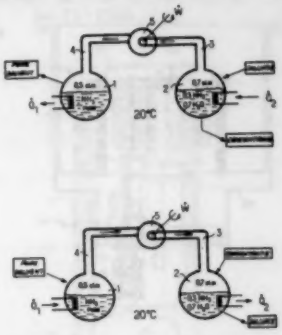
1. An apparatus for sealing a cylinder of the type having a closed end and an open end, to a piston of the type having a face end and a rod end, comprising: a first extension skirt located substantially on the perimeter of the face end of said piston extending in a direction parallel to the direction of motion of said piston; a second extension skirt located substantially on the perimeter of the rod end of said piston extending in a direction parallel to the direction of motion of said piston; a reservoir groove located in the closed end of said cylinder, configured to receive said first extension skirt when said piston face and said cylinder closed end are brought into close proximity; a pressure seal retained in the interior-walled surface of said cylinder, contacting the exterior surface of said second extension skirt; a first fluid occupying said reservoir groove and a space defined by the interior surface of said cylinder and the exterior surface of said first and second skirt extensions and further in contact with said pressure seal.

4,485,629

METHOD AND DEVICE FOR STORAGE IN CHEMICAL FORM OF MECHANICAL OR THERMAL ENERGY AND FOR RECOVERY THEREOF IN MECHANICAL FORM

Pierre Y. J. Le Goff, Vandoeuvre, France, assignor to Centre National de la Recherche Scientifique-C.N.R.S., France

Filed Aug. 4, 1982, Ser. No. 405,306
Claims priority, application France, Aug. 6, 1981, 81 15263
Int. Cl.³ F01K 25/06
U.S. Cl. 60—659 14 Claims



1. A method of storing and regenerating energy which comprises the steps of

(a) supplying a non-ideal solution of a vapor and a liquid in pedetermined proportions;

(b) separating vapors from the solution;

(c) compressing the separated vapors by pump means, to liquify the separated vapors, thus leaving the separated solution with a greater concentration of the original liquid and depleted in the original vapors;

(d) separately storing the liquified vapors and said vapor-depleted solution;

(e) vaporizing liquified vapors, thus expanding the same and generating mechanical energy, through a recovery motor; and

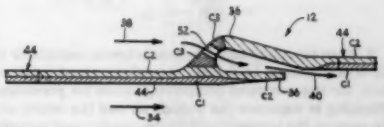
(f) contacting the thus-obtained vapors with the remaining vapor-depleted solution to reform the non-ideal solution in its substantially original proportions.

4,485,630

COMBUSTOR LINER

Milton J. Kenworthy, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 8, 1982, Ser. No. 447,836
Int. Cl.³ F02G 3/00, 1/00
U.S. Cl. 60—757 10 Claims



1. A combustor liner for use between a cooling fluid and hot combustion gases comprising adjacent portions having different thermal coefficients of expansion effective for reducing stress due to differential thermal expansion tendency of said adjacent portions.

4,485,631

METHOD AND APPARATUS FOR RAPIDLY REGENERATING A SELF-CONTAINED CRYOPUMP

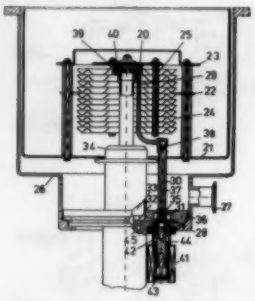
Otto Winkler, Balzers, Liechtenstein, assignor to Balzers Aktiengesellschaft, Liechtenstein

Filed Sep. 13, 1983, Ser. No. 531,690

Claims priority, application Switzerland, Sep. 17, 1982, 5501/82

Int. Cl.³ B01D *8/00*

U.S. Cl. 62—55.5 **6 Claims**



1. A cryopump having a regenerator, comprising at least one housing having a cooling head portion, a displacer in said housing adjacent said cooling head portion and defining with said cooling head portion an expansion space therebetween, at least one regenerator in said housing adjacent said displacer on a side thereof opposite to said cooling head portion, flow means for selectively directing a high pressure gas into said housing and for withdrawing the gas from said housing, and a bypass line connected between said flow means and the expansion space for directing some of the high pressure gas to the expansion space during defrosting.

4,485,632

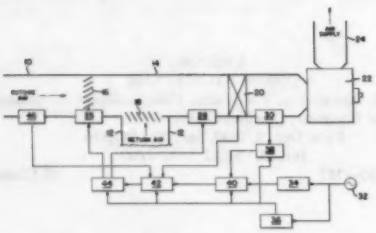
CONTROL CIRCUIT FOR AIR CONDITIONING SYSTEMS

John B. Gallagher, Greensboro, N.C., assignor to Loew's Theatres, Inc., New York, N.Y.

Filed Apr. 20, 1983, Ser. No. 486,698

Int. Cl.³ F25D *17/08*

U.S. Cl. 62—179 **9 Claims**



1. In an air conditioning system wherein outside air or return air is conditioned to achieve a predetermined inside temperature, the improvement comprising means for periodically conditioning in sequence the outside air and the return air, means for sensing the temperatures of the conditioned outside air and the conditioned return air, comparator means responsive to the sensing means for determining the difference in heat content of the conditioned outside air and the conditioned return air, and means responsive to said determination for enabling until the next periodic conditioning of both the outside air and the return air the passage into the air conditioning system of whichever air will achieve the predetermined inside temperature most efficiently.

4,485,633

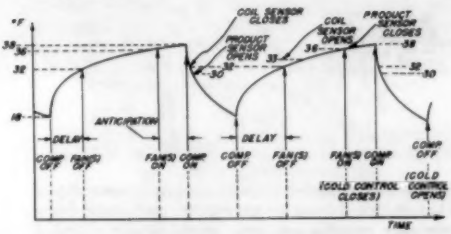
TEMPERATURE-BASED CONTROL FOR ENERGY MANAGEMENT SYSTEM

Eddie W. King, Atlanta, and Robert D. Hughes, IV, Smyrna, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Oct. 18, 1982, Ser. No. 434,862

Int. Cl.³ F25D *17/00*

U.S. Cl. 62—180 **5 Claims**



1. In a refrigeration system for a chilled product vending machine including a refrigeration compressor, temperature sensor means for detecting the temperature within said vending machine and turning said compressor ON and OFF to define a compressor cycle in response to the detection of predetermined temperature limits, an evaporator coil and evaporator fan means for blowing air across said evaporator coil and circulating said air throughout said vending machine, the improvement comprising:

product sensor means for detecting the temperature of said chilled products and cycling said evaporator fan ON in response to detected product temperatures above a predetermined limit, said predetermined limit being less than the temperature required to turn said compressor ON; and

coil sensor means for detecting the temperature of said evaporator coil, and responsive to a coil temperature below a predetermined limit, maintaining said evaporator fan ON during and beyond the end of said comrpessor cycle, and cycling said evaporator fan OFF when the temperature of said coil stabilizes above the freezing point of water.

4,485,634

CONTROL DEVICE FOR AIR CONDITIONER FOR AUTOMOBILE

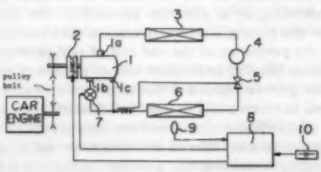
Mitsuo Yasuda; Toshizo Nishizawa; Kazuhide Yuchi; Hiroto Kawahira, and Hideaki Nagatomo, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,203

Claims priority, application Japan, Jan. 18, 1982, 57-5740

Int. Cl.³ F25B *1/00*

U.S. Cl. 62—196.2 **12 Claims**



1. A control device for an air-conditioner for automobile, which comprises in combination:

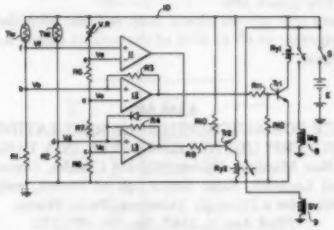
(a) an electromagnetic clutch for selectively transmitting rotation of an automobile engine;
(b) a compressor having a drive shaft connected to said electromagnetic clutch, independent first and second compression mechanisms for compressing a cooling medium due to rotation of said drive shaft, outlet means for discharging the cooling medium compressed by said compression mechanisms, and inlet means for introducing said cooling medium into said first and second compression mechanisms;
(c) a condenser, an expanding device, and a cooling device which are sequentially connected in order by cooling medium supply tubing between said outlet port and said inlet port of said compressor;
(d) opening and closing valve means actuatable for selectively stopping supply of said inlet cooling medium to one of said first compression mechanism and said second compression mechanism, an actuation of said opening and closing valve means causing the outlet quantity of said cooling medium from said compressor to vary; and
(e) control means for controlling said electromagnetic clutch and said opening and closing valve means as a function of input signals of a preset temperature in a passenger cabin of the automobile and a detected temperature in the passenger cabin, thereby controlling said compressor.

4,485,635

CONTROL DEVICE FOR A COMPRESSOR IN A REFRIGERATING SYSTEM

Riichi Sakano, Okabe, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Dec. 21, 1982, Ser. No. 451,941
Claims priority, application Japan, Dec. 21, 1981, 56-190759[U]
Int. Cl.³ F25B *1/00*; B60H *3/04*
U.S. Cl. 62—209 **10 Claims**



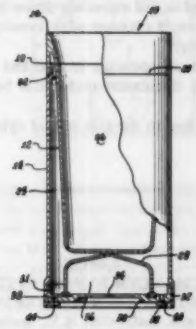
1. A control device for a refrigeration circuit including a compressor, a condenser, a thermostatic expansion device, an evaporator and a blower to blow cool air from said evaporator, said compressor having a magnetic clutch to drive said compressor and a variable displacement device to change the capacity of said compressor, said control device comprising:
a voltage source;
magnetic clutch control means connected to said voltage source for actuating said magnetic clutch to drive said compressor in response to the temperature of the cool air generated by said evaporator, said magnetic clutch having first temperature detecting means for detecting the temperature of the cool air;
capacity control means connected to said voltage source and said magnetic clutch control means for actuating said variable displacement device to change the capacity of said compressor in response to the temperature of the cool air generated by said evaporator, said capacity control means having a second temperature detecting means for detecting the temperature of the cool air, said second temperature detecting means having a different thermal response characteristic than said first temperature detecting means, said capacity control means evaluating the difference between the thermal responses of said first and second temperature detecting means to determine when to actuate said variable displacement device to change the capacity of said compressor.

4,485,636

CONTAINER WITH COOLING CAPABILITY

Rolando V. Hilado, 2725 Pam Pl., West Covina, Calif. 91792

Filed Nov. 10, 1983, Ser. No. 550,396
Int. Cl.³ F25D *11/00*
U.S. Cl. 62—430 **14 Claims**



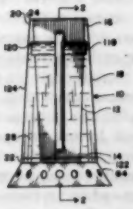
1. A double-walled cooling container for beverages and/or foods comprising:
an inner wall for receiving a product to be cooled and forming one of two walls of an annular refrigerant cavity within the container;
an outer wall enclosing and joined to said inner wall at the upper rim thereof, said outer wall forming the other wall of said refrigerant cavity, which cavity increases in volume from top to bottom;
a base connected to said outer wall of the refrigerant cavity;
a resilient diaphragm disposed on said base and forming a diaphragm cavity with said base; and
a fluid refrigerant disposed within and filling said refrigerant cavity between said inner and outer walls.

4,485,637

DRINKING MUG

Loyal E. Campbell, 2075 Fisher St., Huntsville, Ala. 35803

Continuation-in-part of Ser. No. 345,035, Feb. 2, 1982, Pat. No. 4,402,195. This application Sep. 1, 1983, Ser. No. 528,632
The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—457 **5 Claims**



1. A drinking container assembly comprising:
a circular-shaped tumbler;

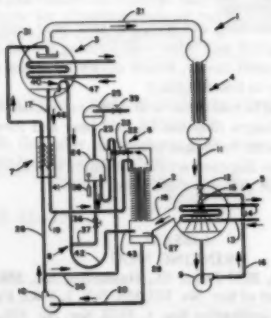
a transparent cylinder surrounding the sides, and extending below, said tumbler and spaced from said tumbler, and a top of said tumbler and cylinder being sealably connected;
a bottom extending across and closing a bottom end of said cylinder and spaced from the bottom of said tumbler therein defining a cavity between said tumbler, said cylinder, and said bottom;
a filling member positioned on said bottom and having an opening through said bottom;
a closure adapted to mate with and sealably close said filling member;
a fluid partially filling said cavity;
a skirt attached to and extending down from an outer region of said bottom to a bottom edge forming a base support for said assembly;
a series of spaced openings around and through said skirt, enabling air circulation under said bottom of said container; and
a handle attached to the side of said cylinder.

4,485,638

HEAT EXCHANGER BYPASS SYSTEM FOR AN ABSORPTION REFRIGERATION SYSTEM

Robert C. Reimann, Lafayette, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 22, 1983, Ser. No. 468,222
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—476 **4 Claims**



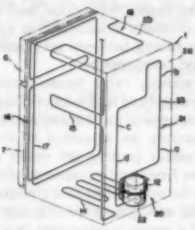
1. In an absorption refrigeration system having a generator wherein weak solution is heated to form refrigerant vapor which flows to a condenser, and to form relatively hot, strong solution which flows from the generator through a heat exchanger to an absorber wherein the strong solution is cooled and brought into contact with refrigerant to form relatively cool, weak solution which is pumped back through the heat exchanger, in heat exchange relationship with the hot, strong solution flowing therethrough, to the generator, a heat exchanger bypass system comprising:
a bypass line including a gooseneck located in the generator, said gooseneck having an open end positioned in the generator below the level to which strong solution builds up in the generator during normal operation of the refrigeration system and said gooseneck sized, and positioned in the generator, to allow strong solution in the generator to flow over a top part of the gooseneck into the bypass line only when strong solution builds up in the generator above a selected level.

4,485,639

COOLING DEVICE FOR A REFRIGERATOR COMPRESSOR

Noriaki Sakamoto, Ibaraki, Japan, assignor to Tokyo Shibaura Kenki Kabushiki Kaisha, Japan

Filed Feb. 18, 1983, Ser. No. 467,881
Claims priority, application Japan, Jul. 19, 1982, 57-126033
Int. Cl.³ F25B *31/00*
U.S. Cl. 62—505 **5 Claims**



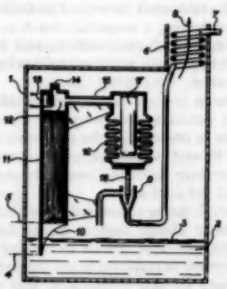
1. A refrigerator comprising:
a rear plate and side plates;
a compressor containing cooling oil and connected in series with a first closed loop for circulating a first refrigerant for performing a refrigeration cycle; and
a cooling device for cooling said compressor, said cooling device defining a second closed loop of a thermo-siphon for circulating a second refrigerant, said thermo-siphon being provided independently of said first closed loop and including a heat absorbing portion immersed in the cooling oil to cool said compressor, a heat discharging portion thermally contacting the inner surface of one of said rear or side plates; and
wherein said second closed loop is filled with the second refrigerant to 60 to 80% of the second closed loop inner volume.

4,485,640

DEVICE FOR AUTOMATICALLY REGULATING THE SUPERFLUID HELIUM LEVEL IN A TANK

Gilbert Bon Mardion, Eybens; Gérard Claudet, Grenoble, and Marcel Locatelli, Saint Ismier, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 1, 1983, Ser. No. 481,272
Claims priority, application France, Apr. 1, 1982, 82 05644
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—514 R **3 Claims**



1. A device for automatically regulating the level of helium in the superfluid state in a tank, wherein it comprises in the tank above the liquid:

a pipe for supplying the tank with superfluid helium;

a member for removing the superfluid helium by spontaneously producing on its surface a so-called Rollin film, which is essentially located at the horizontal level to which it is desired to regulate the free surface of the helium in the tank and whereof the removing perimeter, which is a variable as a function of the altitude, increases over a height equal to the tolerance in the evolution of the level from its base to maximum value at its upper junction point with a superleak associated therewith and which is then traversed by the thus removed superfluid helium;

a heated chamber into which issues the superleak and which is linked, on the one hand, with an outlet having a controlled flow rate to the atmosphere of the tank and, on the other hand, to a chamber having flexible deformable walls and a variable volume, said walls causing, during their extension or retraction, the displacement of a rod, whose position is consequently characteristic of the helium level in the tank;

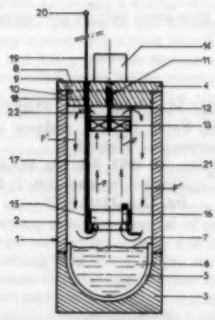
means for making the entry of helium in the tank supply pipe dependent on the position of the rod.

4,485,641

DEVICE FOR FREEZING BIOLOGICAL PRODUCTS

Nicole Angelier, Echirolles, and Francois Colomb, Grenoble, both of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed Jul. 5, 1983, Ser. No. 510,898
Claims priority, application France, Jul. 7, 1982, 82 11896
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—514 R **4 Claims**



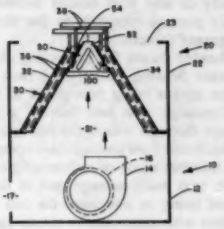
1. A device for freezing biological products, comprising a thermally insulated vertically elongated casing, means for supporting said biological products within the casing, a receptacle for liquid nitrogen inside the casing and at the bottom of the casing, a cover closing the top of the casing, a sleeve extending vertically within the casing but terminating downwardly a distance above the level to which liquid nitrogen may fill said receptacle, a rotary gas circulation impeller within an upper portion of the casing and having an axis of rotation which is coaxial with the sleeve, a variable speed motor for driving said impeller, and means supporting the sleeve from the cover with the upper end of the sleeve spaced below the cover to permit circulation of gaseous nitrogen in one vertical direction through the sleeve and in the opposite vertical direction outside the sleeve.

4,485,642

ADJUSTABLE HEAT EXCHANGER AIR BYPASS FOR HUMIDITY CONTROL

Phil J. Karns, Baldwinsville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,404
Int. Cl.³ F25B *39/02*
U.S. Cl. 62—515 **11 Claims**



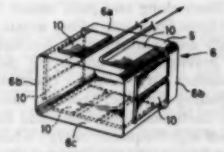
1. A heat exchange unit for controlling the temperature and humidity of air to be conditioned having a casing defining an air flow path, a heat exchanger located in the air flow path within the casing for transferring heat energy between a fluid flowing through the heat exchanger and at least a portion of the air flowing through the casing, said heat exchanger extending across a portion of the air flow path defining a bypass area through which air may flow through the unit without being in heat exchange relation with the heat exchanger and damper means mounted to regulate the flow of air through the bypass area to apportion the air flow whereby a portion of the air flows through the heat exchanger and a portion of the air flows through the bypass area.

4,485,643

EVAPORATOR FOR REFRIGERATORS AND THE LIKE

Shuichiro Kato, Kawanishi; Yoshinori Yabu, Tenri, and Yoshihiro Kinoshita, Osaka, all of Japan, assignors to The Nippon Aluminium Mfg. Co. Ltd., Osaka; Kabushiki Kaisha Toshiba and Kakinuma Kinzoku Seiki Co. Ltd., both of Tokyo, all of, Japan

Filed Aug. 9, 1982, Ser. No. 406,975
Claims priority, application Japan, Aug. 24, 1981, 56-133172
Int. Cl.³ F25B *39/02*
U.S. Cl. 62—519 **9 Claims**



1. An evaporator comprising:

at least one multi-passage unit of plate-like configuration constructed of a thermally conductive material, said multi-passage unit having a plurality of partition walls to define a plurality of refrigerant flow passages in parallel with one another, and further having substantially the same thickness over the entire width area in which said flow passages are defined along a length of said multi-passage unit, said flow passages being spaced from one another only by respective ones of said partition walls and open at opposite ends of said multi-passage unit;

inlet header means for distributing refrigerant into said plu-

rality of refrigerant flow passages, said inlet header means being connected to one of said opposite ends of the multi-passage unit and having a refrigerant supply passage through which the refrigerant is supplied and to which said flow passages are open at said one end, said header means having a cutout axially formed through the wall thereof to communicate with said refrigerant supply passage, said one end of the multi-passage unit fixedly engaging said cutout so that a distance of extension thereof radially of said inlet header means into said refrigerant supply passage increases in the direction of flow of the refrigerant therethrough;

outlet header means for collecting and discharging the refrigerant flowing out of said flow passages, said outlet header means being connected to the other end of said multi-passage unit and having a refrigerant discharge passage through which the refrigerant is discharged and to which said flow passages are open at said other end; and

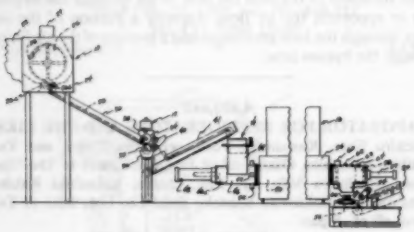
a sheet member made of a thermally conductive material to which said multi-passage unit is fixed with one surface thereof being in abutment on one surface of said sheet member with substantially no air gap therebetween.

4,485,644

APPARATUS FOR CONTINUOUSLY TREATING STAPLE I ENGTH TEXTILE FIBROUS MATERIALS

William J. Kennedy, Spartanburg, S.C., and A. John Beucus, Morganton, N.C., assignors to Beu-Tex Corporation, Morganton, N.C.

Filed Feb. 7, 1983, Ser. No. 464,616
Int. Cl.[3] D06B *3/02*
U.S. Cl. 68—5 D **10 Claims**



1. In apparatus for the treatment of textile staple length fibrous materials while continously moving the same along a desired path of treatment to a point of collection and including means for continously delivering a metered amount of generally loose fibers along said path, means for temporarily condensing the loose fibers into a fiber web to improve their cohesive integrity and uniformity of distribution along the path, means for gravitationally conveying the web to applicator means containing a dye or other chemical liquid composition for impregnating the fibers passing thereto, and means for heating the continously moving liquid impregnated fibers by application of high frequency energy while the fibers are under compression to react the dye or other chemical thereon before fiber collection; the improvement wherein

(a) said applicator means comprises upper and lower rotatably driven nip rollers having horizontal axes of rotation disposed substantially in a common vertical plane, means for applying a liquid composition to the surface of each of the rollers for contact with fibers passing through the nip of the rollers; and

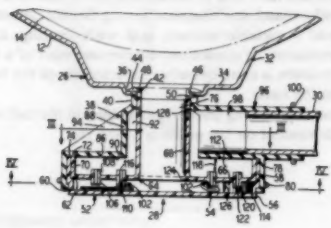
(b) said gravitational conveying means comprises means defining a generally smooth inclined fixed surface having a fiber web discharge end spaced from the surface of the nip rollers and disposed for conveying the fiber web downwardly from said condensing means across the unsupported space between the discharge end and the surface of the rollers into and through said applicator means nip rollers without break in web continuity as it passes into the liquid composition and through the nip of the rollers.

4,485,645

FOREIGN OBJECTS TRAP FOR AUTOMATIC WASHER

James R. Mulder, Berrien Township, Berrien County; John W. Pielemeier, St. Joseph, and Joel M. Snider, Lincoln Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 30, 1982, Ser. No. 430,953
Int. Cl.[3] D06F *39/10*
U.S. Cl. 68—18 F **11 Claims**



1. In an automatic washer having wash liquid recirculation and drain means, an improved foreign objects trap comprising:

a housing having an inlet and an outlet;

baffle means between said inlet and said outlet, said baffle means including a plurality of tubes extending therethrough, said tubes having arcuate shaped openings and unrestricted flow passages therethrough;

said inlet being arranged to communicate with an underside of said baffle means to trap floating objects beneath said baffle means, and

said housing defining a settling chamber beneath said baffle means,

whereby heavier than water objects are trapped beneath said baffle means.

4,485,646

APPARATUS FOR WASHING FIBER STOCK

Kaj O. Henricson, Kymi, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Jan. 26, 1983, Ser. No. 461,176
Claims priority, application Finland, Feb. 2, 1982, 820389
Int. Cl.[3] D21C *9/02*
U.S. Cl. 68—18 F **3 Claims**

1. An apparatus for washing fiber stock, comprising a substantially horizontally disposed rotating screen drum, said drum having an inner casing which serves as the screen surface and an outer casing, means for supplying fiber stock to one end of said screen drum for passage along said screen surface through said screen drum, means for removing fiber stock from the other end of said screen drum, a longitudinally ex-

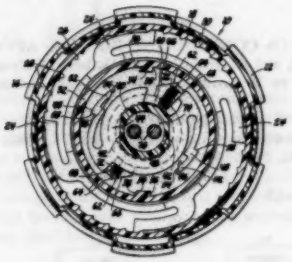
tending liquid supply member fixedly mounted beneath the centre axis of the screen drum, immersed in the fiber stock and provided with openings, wherein the space between said inner casing of the drum and said outer casing of the drum is divided into compartments by means of radial partition walls which are of the same length as the drum, said compartments serving as suction chambers.

4,485,647

LOCKING FUEL CAP

William S. Matthews, Huron, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 2, 1982, Ser. No. 394,544
Int. Cl.³ B65D *55/14*
U.S. Cl. 70—165 **3 Claims**



1. A fuel cap for closing a fuel fill tube comprising; a handgripping portion; a threaded closure portion rotatably supported in said handgripping portion and adapted to threadably engage the fill tube and being rotatable therein to move in an opening direction and a closing direction; coupling means rotatably disposed in said handgripping portion for providing a positive couple with said threaded closure portion in the opening direction and for providing a torque limited couple with said threaded closure portion in the closing direction and including drive lug means; lock means disposed in said handgripping portion and being movable to lock and unlock positions; and lock controlled means having actuator means including a latch plate rotatably supported on said handgripping portion and an actuator arm operatively connected with said lock means, drive means including integral drive finger means engageable by and responsive to said latch plate of said actuator means for selectively drivingly engaging said drive lug means to selectively connect said coupling means to said handgripping portion when said lock means is moved to the unlock position for permitting selective removal of said fuel cap, and latch means formed on said latch plate and said drive finger means for maintaining said drive finger means aligned for engagement with said drive lug means when said lock means is moved to the lock position until said coupling means undergoes the torque limiting operation during rotation of said fuel cap in the closing direction and engagement of said drive finger means with said drive lug means permits release of said latch means.

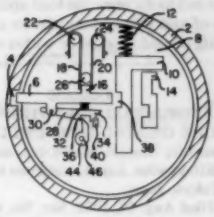
4,485,648

KEY LOCK WITH A FLYING SIDEBAR

Jacob Rabinow, 6920 Selkirk Dr., Bethesda, Md. 20817

Filed Sep. 27, 1982, Ser. No. 424,797
Int. Cl.³ E05B *29/02, 63/00*
U.S. Cl. 70—364 R **12 Claims**

1. In a lock to be operated by a key; a plurality of key-settable elements operable by the key to move into selected positions respectively to enable the lock to be unlocked; a movable element, physically spaced from said key-settable elements when the lock is in a locked state, operable to hold the lock in a locked state; said movable element having such inertia and bias that when it is moved in a given direction and released it will move into engagement with said key-settable elements and if the key has set those key-settable elements into said selected positions the movable element will move to a location which places the lock in an unlocked state; said lock including enabling means for moving said movable element, after the key has set said key-settable elements in said selected positions, in



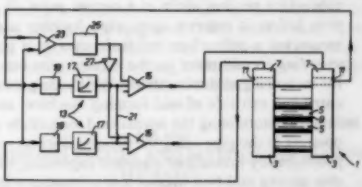
said given direction and then releasing the movable element so it will move into engagement with said key-settable elements; said key-settable elements including means which when said key-settable elements are in said selected positions the movable element may move to said location and thus place the lock in an unlocked state; said given direction being a direction away from said key-settable elements.

4,485,649

ROLLING MILL CONTROL SYSTEM

Stephen Martin, Sheffield, and Roy Clegg, Rotherham, both of England, assignors to Davy McKee (Sheffield) Limited, Sheffield, England

Filed Oct. 15, 1982, Ser. No. 434,719
Claims priority, application United Kingdom, Oct. 16, 1981, 8131276
Int. Cl.³ B21D *37/00*
U.S. Cl. 72—10 **12 Claims**



12. A control system for a rolling mill having a pair of housings, at least two rolls supported at their ends within said housings with a gap defined between said rolls, and a pair of hydraulic cylinders respectively operatively associated with said pair of housings for varying said gap defined between said rolls in order to prevent abnormal effects from being generated within a workpiece, having a tapered cross-section as viewed normal to its length, being processed within said rolling mill, said system comprising:

a pair of first circuits for respectively controlling said pair of hydraulic cylinders so as to control said gap defined between said rolls;

means for producing signals representative of the load exhibited within each of said pair of housings and for conveying said load signals to said pair of first circuits;

means interconnecting said pair of first circuits together for producing averaged output stretch signals from said pair of first circuits to said pair of hydraulic cylinders in response to said load signals; and

differential circuit means connected to said load-signal producing means for providing differential output signals, of equal magnitude yet opposite polarity, to said pair of first

circuits such that said differential output signals are processed by said pair of first circuits along with said averaged output stretch signals whereby composite output signals, comprising said averaged output stretch signals and said differential output signals, are conveyed to said pair of hydraulic cylinders in such a manner as to increase the load upon the lighter-loaded housing of said pair of housings and to decrease the load upon the heavier-loaded housing of said pair of housings so as to achieve proper processing of said workpiece within said rolling mill.

4,485,650

METHOD OF MEASURING THE NORMALIZED MAGNITUDE OF RING OPENING IN SPIRAL PIPE

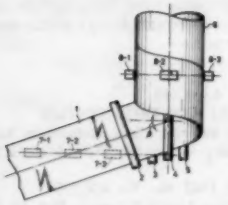
Hiroshi Yamamoto; Masaki Motomura, and Keisuke Kawaguchi, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 18, 1982, Ser. No. 409,104

Claims priority, application Japan, Aug. 19, 1981, 56-128693; Jun. 19, 1982, 57-104688

Int. Cl.³ B21B *37/00*; B21C *37/12*

U.S. Cl. 72—12 **7 Claims**



1. A method of measuring the normalized magnitude of a ring opening in a sprial pipe comprising:

measuring, while the spiral pipe is being manufactured, a subsurface residual stress at a certain point on a material strip before it enters a spiral-pipe forming machine and measuring a subsurface residual stress at a point corresponding to said point on the formed pipe using a means for measuring said two stresses which are provided on an entry and exit side of said forming machine; and

indirectly determining the normalized magnitude of the ring opening in the pipe using the measured stress values and a preliminarily formulated equation expressing the relationship among said two stresses and a constant related to the size of the material strip and the outside diameter of the pipe.

4,485,651

METHOD AND APPARATUS FOR UNDERWINDING STRIP ON A DRUM

George W. Tippins; John E. Thomas; Richard S. Connolly, all of Pittsburgh; Charles K. Pine, Gibsonia, and Wayne G. Pottmeyer, Murrysville, all of Pa., assignors to Tippins Machinery Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 417,423, Sep. 13, 1982, Pat. No. 4,455,848. This application Apr. 2, 1984, Ser. No. 596,066

Int. Cl.³ B21B *37/00, 41/06, 1/34*

U.S. Cl. 72—12 **9 Claims**

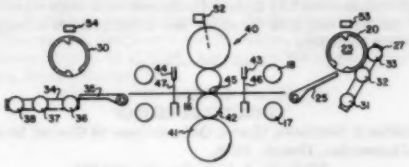
1. A method of underwinding strip on a drum along the passline of a hot reversing mill comprising:

A. positioning the drum in a receiving mode;

B. passing the strip through the mill at a given thread speed;

C. detecting the presence of the strip at a given position downstream of the mill and upstream of the drum;

D. activating the drum in an underwinding direction at a given time delay from said given position, said time delay representative of a distance in which the strip is through a drum slot and internal of the drum; and



E. speed matching the drum and the strip as the strip is surface-wound about the drum in a surface winding mode.

4,485,652

METHOD OF CONTROLLING ROLLING APPARATUS

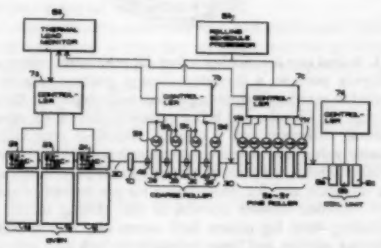
Morio Shoji, and Akiyoshi Yamamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1983, Ser. No. 470,451

Claims priority, application Japan, Mar. 1, 1982, 57-33192; May 27, 1982, 57-91666

Int. Cl.³ B21B *37/08*

U.S. Cl. 72—19 **5 Claims**



1. A method of controlling extractor means and roller means of a rolling apparatus such that heated materials are successively taken out from heating means and fed to a transport table at a predetermined time interval by said extractor means and rolled to a predetermined thickness by said roller means through a plurality of rolling passes providing respective predetermined gaps, comprising the steps of:

obtaining the root mean square value of electrical power supplied to motor means for driving said roller means during each of said rolling pass; and

correcting said interval at which the materials are successively taken out by said extractor means by setting this interval to an amount such that the maximum root mean square value of the power supplied to said motor means is less than the permissible root mean square power value of said motor means in any one of the passes.

4,485,653

HYDRAULIC CHUCK FOR THREADED TUBE

Robert Rasmussen, Minneapolis, Minn., assignor to Air-Mo Hydraulics Inc., Minneapolis, Minn.

Filed Jan. 24, 1983, Ser. No. 460,468

Int. Cl.³ B21D *39/08*

U.S. Cl. 72—58 **9 Claims**

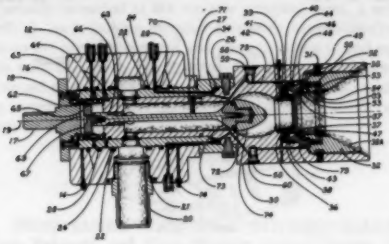
1. A threaded coupling chuck device for use with a male threaded tube, comprising:

a chuck body mounted about an axis of rotation, and including a shaft means centered about said axis;

sleeve means rotatably mounted inside said body and driven by said shaft means;

adaptor means fixedly mounted on said sleeve and said shaft, and including supported thereon a nose cone, said nose cone having a threaded portion for forming a coupling with said tube upon rotation in a first direction about said axis;

seal means for preventing passage of fluid through said coupling;



port means for defining a passage through said adaptor and said body, including an inlet on said body for connection to a source of fluid and an outlet through said adaptor means to the interior of said tube; and

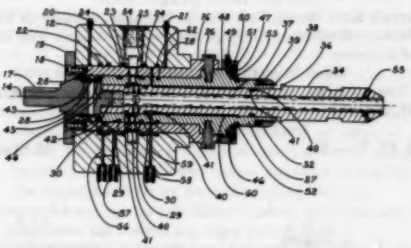
valve means in said passage in said adaptor, including means for positioning said valve in a first position to permit flow of fluid through said passage and a second position to prevent fluid flow in said passage.

4,485,654

HYDRAULIC CHUCK FOR THREADED TUBE

Robert Rasmussen, Minneapolis, Minn., assignor to Air-Mo Hydraulics Inc., Minneapolis, Minn.

Filed Jan. 24, 1983, Ser. No. 460,497
Int. Cl.³ B21D *39/08*
U.S. Cl. 72—58 **9 Claims**



1. A threaded coupling chuck device for use with a female threaded tube, comprising:

a chuck body centered about an axis of rotation, and including a shaft means centered about said axis;

an adaptor means rotatably mounted in said body and having a threaded portion for engagement with said threaded tube to form a threaded coupling upon rotation of said adaptor in a first direction about said axis;

seal means on said adaptor and positioned to prevent passage of fluid through said coupling, and including means to activate said seal means; and

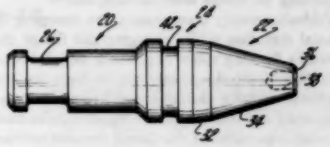
port means defining a passage through said adaptor and said body, including an inlet on said body for connection to a source of fluid and including an outlet through said adaptor means to the interior of said tube.

4,485,655

TOOL HOLDER FOR A MINING TOOL BIT AND METHOD FOR MAKING SAME

Peter D. Ewing, Milford, Mich., assignor to National Set Screw Corporation, Plymouth, Mich.

Filed Oct. 29, 1980, Ser. No. 201,940
Int. Cl.³ B21K *5/01*
U.S. Cl. 72—68 **1 Claim**



1. The method of making a tool holder for a mining tool bit, said tool holder being of the type comprising a unitary steel body including a cylindrical shank adapted to be inserted into the socket of a support block, a conical head adapted to receive a tool bit, and a cylindrical section between the shank and the head, said method comprising the steps of,

cold-heading a cylindrical steel blank to provide an intermediate blank with said cylindrical shank, conical head, and cylindrical section between the head and the shank,

reducing said shank by roll-forming to provide a first neck defining an annular retaining groove in said shank for receiving a retaining member in said block, said roll-forming of said shank being performed by rolling said shank between a pair of flat dies at a temperature of about 1200 degrees F., said first neck having an axial length approximately equal to its diameter and having a diameter equal to 0.7 times the diameters of the shank,

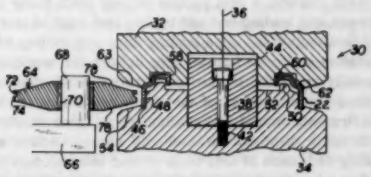
reducing said cylindrical section by roll-forming to provide a second neck defining an annular extraction groove in said cylindrical section for receiving an extracting means for removal of said tool holder from said block, said roll-forming of said section being performed by rolling said second neck portion between a pair of flat dies at a temperature of about 550 degrees F., said second neck having an axial length approximately to 0.2 times the diameter of said second neck and having a diameter about 0.8 times the diameter of said cylindrical section.

4,485,656

TRANSMISSION PISTON AND METHOD OF MAKING THE SAME

Carl A. Nilson, and Thomas J. Weir, both of Jackson, Mich., assignors to Hayes Albion Corporation, Jackson, Mich.

Filed Aug. 27, 1982, Ser. No. 412,282
Int. Cl.³ B21H *1/00*
U.S. Cl. 72—84 **2 Claims**



1. The method of forming a piston for an automatic transmission of sheet metal wherein the piston is of an annular configuration having an axis, a radial pressure face and an axially extending flange defining the piston periphery having an outer

surface which includes an annular seal receiving groove comprising the steps:

(a) forming an annular sheet metal stamping having an axis, an annular radial pressure face portion and an axially extending cylindrical flange projecting from said pressure face portion having an inner surface and an outer surface defining the periphery of said stamping,

(b) rotating said stamping about its axis while radially supporting the flange inner surface, and

(c) simultaneously compressing the stamping flange in an axial direction while engaging the flange outer surface with a forming roller to produce radially outward deformation of the flange material to form the seal receiving groove whereby the flange axial compression provides the primary material required for radial deformation and the radial dimension of the flange remains substantially constant.

4,485,657

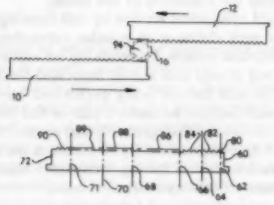
TOOTH FORMING TOOL AND METHOD FOR SPLINING TUBULAR ELEMENTS

Robert R. Ridley, Pontiac, and Paul Fitzpatrick, Fenton, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Feb. 10, 1982, Ser. No. 347,747

Int. Cl.³ B21D *17/00, 53/28;* **B21H** *5/02*

U.S. Cl. 72—88 **15 Claims**



1. In the combination of a rotatable mandrel having spaced apart external teeth and tool means having spaced apart teeth in meshing engagement with the mandrel teeth with a tubular workpiece therebetween to pressure form a selected spline, gear or like tooth form in the periphery of the workpiece, said tool means including a body having a leading end and a trailing end and being provided with a working face having a plurality of teeth thereon, a first section of said teeth being disposed between said leading end and trailing end, each of said teeth in said first section having a leading edge and trailing edge configuration configured to initially deform the workpiece substantially centrally in the space between adjacent mandrel teeth, a second section of said teeth being disposed between said first section and said trailing end, a third section of said teeth being disposed between said second section and said trailing end, each of said teeth in said third section having a leading edge and trailing edge configuration providing a tooth form conjugate to said selected tooth form, each of said teeth in said second section being asymmetrically configured with a leading edge corresponding substantially in configuration to that of said teeth in said third section and a trailing edge corresponding substantially in configuration to that of said teeth in said first section.

4,485,658

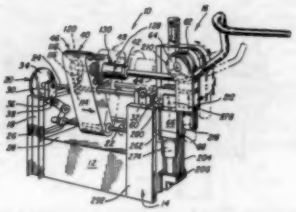
CARRIAGE ASSEMBLY FOR A TUBE BENDING MACHINE

A. K. Stewart, and John H. Hewitt, both of c/o Teledyne Pines, 601 W. New York St., Aurora, Ill. 60506

Filed May 31, 1983, Ser. No. 499,779

Int. Cl.³ B21D *7/04*

U.S. Cl. 72—149 **20 Claims**



1. In a tube bending machine including a longitudinal base and a dual bend head supported by said base and permitting bending of a tube by either a first or second bend assembly, a carriage assembly comprising:

a carriage body fixed to a nut, said body including rotatable means for grasping a tube;

a screw rotatably supported longitudinally on said base and extending through said nut;

a rotatable shaft laterally fixed to but longitudinally slidable with respect to said carriage body, said shaft being drivably connected to said rotatable means;

means for fixing said shaft to said base in either a first or a second position to present a grasped tube to either the first or second bend assembly respectively;

means for rotating said screw; and

means for rotating said shaft.

4,485,659

APPARATUS FOR ADJUSTABLY LOCKING THE MOVABLE COUNTER GRIPPING HEAD OF A SHEET OR SECTION STRETCHER

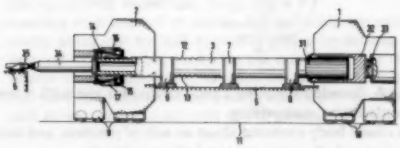
Heinrich Kutz, Neuss, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,257

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111183

Int. Cl.³ B21D *11/02, 25/00*

U.S. Cl. 72—302 **10 Claims**



1. In apparatus for stretching metal sheet or sections comprising a movable gripping head adapted to grip a first end of a sheet or section to be stretched, a counter gripping head facing and spaced from the movable gripping head and adapted to grip a second end of the sheet or section to be stretched, elongate pressure elements extending from the counter gripping head towards the movable gripping head level with and on respective opposite sides of the sheet or section to be stretched, and means for moving the movable gripping head away from the counter gripping head for stretching the said sheet or section thereby generating com-

pression stresses in the pressure elements, the improvement comprising, each pressure element has a substantially rectangular peripheral cross-sectional shape, an upper surface and a lower surface on each pressure element, a series of teeth on said surfaces extending along each pressure element, respective upper and lower locking members for each pressure element adjustably mounted in the counter gripping head, a series of teeth on each locking member extending longitudinally relative to the pressure element and corresponding to and engageable with said teeth on each respective pressure element and arranged to mesh therewith, and means for moving said locking members into and out of mesh with said teeth on said pressure elements.

4,485,660

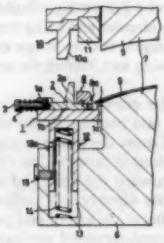
PRESS SUBLIFTER WITH A MOVABLE GAUGE

Kunio Takeuchi, and Takao Inamori, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 29, 1982, Ser. No. 454,365

Int. Cl.³ B21D *5/04*

U.S. Cl. 72—313 **7 Claims**



1. A movable guide gauge assembly for accurately positioning the edge of a workpiece in a sheet metal press having a lower die with a generally horizontal top surface, an upper die having a bottom surface conforming to the top surface of the lower die, the upper die being movable toward and away from the lower die, and a sublifter positioned adjacent to an edge of the upper surface of the lower die, wherein the movable guide gauge assembly comprises:

a cam follower mounted on the sublifter and movable with respect thereto toward and away from an edge of the lower die between a retracted position and a gauging position, the cam follower having a surface inclined from the vertical and facing away from the lower die;

means for urging the cam follower away from said edge of the lower die toward the retracted position;

a guide gauge fixed to the cam follower and having a guide surface for locating an edge of a workpiece placed on the upper surface of the lower die with respect to said edge of the lower die;

a cam disposed above the sublifter adjacent to the upper die and having an inclined surface corresponding to the inclined surface of the cam follower and facing toward the lower die, the cam being movable in cooperation with, and parallel to the direction of, movement of the upper die so that the inclined surface of the cam engages the inclined surface of the cam follower to move the cam follower from said retracted position to said gauging position as the upper die moves toward the lower die;

means for mounting the sublifter for movement relative to the lower die in a direction parallel to the direction of movement of the upper die between predetermined upper and lower limits; and

means for urging the sublifter toward said upper limit.

4,485,661

DEEP-DRAWING END EDGE-TRIMMING DIE

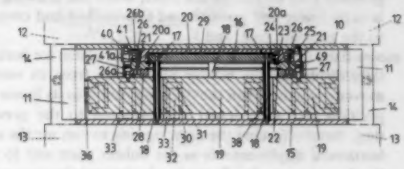
Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Sep. 16, 1982, Ser. No. 418,801

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136753

Int. Cl.³ B21D *28/00, 28/14*

U.S. Cl. 72—332 **17 Claims**



1. A deep-drawing and edge-trimming tool assembly which is attachable to the upper and lower platens of a vertical press and designed to shape a sheet metal blank into a part with a main panel and a deep-drawn upstanding peripheral edge flange, the tool assembly comprising in combination:

a lower die mounting plate designed to be supported on the lower press platen;

a drawing punch fixedly attached to the lower die mounting plate and maintained at a vertical distance therefrom by means of at least one spacing member, the drawing punch having an outer peripheral contour determining the inner contour of the peripheral edge flange of the part and a vertical height at said contour determining the trimmed inner height of said edge flange, the contour of the drawing punch forming a drawing edge on the upper side of the drawing punch and a trimming edge on its lower side;

a bolster plate arranged vertically between the lower die mounting plate and the drawing punch, the bolster plate having an upper side and being guided for vertical movements between upper and lower end positions along a vertical movement axis; a pressure ring attached to the upper side of the bolster plate in such a way that, in the upper end position of the bolster plate, it surrounds the drawing punch, the pressure ring having an upper surface designed to engage a peripheral area on the lower side of the blank;

an upper die mounting plate designed to be supported on the upper press platen;

a drawing ring carried by the upper die mounting plate in vertical alignment with the drawing punch and the pressure ring on the bolster plate, the drawing ring having upper and lower sides and being movable vertically by the press from an upper end position at a distance above the drawing punch and the pressure ring to a lower end position, the drawing ring having an inner peripheral contour forming a drawing edge at its lower side which cooperates with the drawing edge of the drawing punch to produce a deep-drawing action on the blank, when the drawing ring moves vertically past the drawing punch in a closing movement of the press, said drawing ring contour further forming a trimming edge at its upper side which, in the lower end position of the drawing ring, is in shearing alignment with the trimming edge of the drawing punch, the lower surface of the drawing ring being designed to engage a peripheral area on the upper side of the blank, prior to and during the deep-drawing action;

means for raising the bolster plate from its lower end position to its upper end position, said bolster plate raising means being also operable to press the pressure ring against the drawing ring and against the peripheral area of the blank engaged therebetween during the deep-drawing action;

means for supporting the bolster plate on the lower die mounting plate in such a way that the bolster plate is free

to execute horizontal displacements in its lower end position;

means defined by the drawing ring and the pressure ring for radially centering the drawing ring in relation to the pressure ring in their approached position;

means for attaching the drawing ring to the upper die mounting plate in such a way that the drawing ring is free to execute horizontal displacements in unison with the pressure ring on the bolster plate, when the drawing ring is in its lower end position and approached and centered to the pressure ring; and

means fixed in relation to the lower press platen for horizontally displacing the bolster plate away from its vertical movement axis, when the drawing ring is in its lower end position and approached and centered to the pressure ring, thereby forcing the drawing ring to execute the same horizontal displacements as the bolster plate and to trim the deep-drawn edge flange in a horizontal shearing action between the aligned trimming edges of the drawing ring and of the drawing punch.

4,485,662

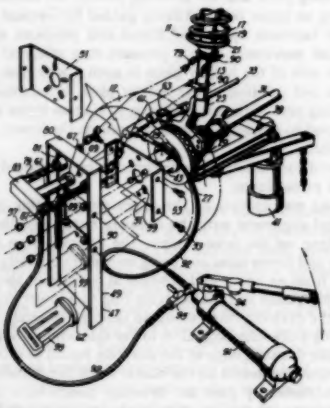
SUSPENSION STRUT ADJUSTING TOOL

Voyd H. Justice, 1295 New Hope Rd., Lawrenceville, Ga. 30245

Filed Nov. 4, 1982, Ser. No. 439,348

Int. Cl.³ B21D *1/12*

U.S. Cl. 72—380 **11 Claims**



10. A method of adjusting a suspension strut in the front suspension system of a vehicle comprising the steps of mounting a web to the lug bolts corresponding to the strut being adjusted, applying from a first point on the web a first force to a first portion of the strut and applying from a second point on the web located approximately the same distance and direction from the lug bolts as the first point a second force, of substantially equivalent magnitude in substantially the opposite direction as the first force, to a second portion of the strut in such a manner that the appropriate camber is imparted to the wheel, the first and second forces substantially cancel each other, and the resulting force transmitted to the wheel bearings is insufficient to deform or damage the wheel bearings.

4,485,663

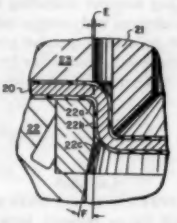
TOOL FOR MAKING CONTAINER

Vance B. Gold, Lombard, and Thomas L. Phalin, Cary, both of Ill., assignors to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 234,428, Feb. 13, 1981, abandoned. This application Dec. 13, 1983, Ser. No. 560,280

Int. Cl.³ B21D *72/00*

U.S. Cl. 72—347 **5 Claims**



1. A drawing and ironing die associated with a punch and each being mounted in a press and each aligned with the other along their respective axis for relative movement therealong to form by concurrent drawing and ironing including bending, unbending and ironing a thin sheet of metal stock between said die and punch thereby generating a hollow cylinder having a side wall uniformly circular and being ironed to a lesser thickness and with an integral bottom at one end and an opening at the other, said drawing and ironing die improvement comprising;

a generally circular draw die being a structure with an opening to receive said punch end and said opening having a predetermined draw die radius extending into said opening right to a lead-in taper of less than 3° and said taper being angled toward the center of said opening and extending inwardly directly to a vertical ironing land being generally parallel to the axis of said punch and die and said land having a predetermined vertical length for establishing a place of predetermined and reduced radial clearance between said land and the side of said punch for ironing the thin metal side wall of the generated cylinder.

4,485,664

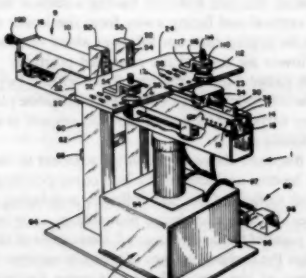
DEVICE FOR FORMING AND BENDING METAL

Robert E. Richards, Kalamazoo, Mich., assignor to J. A. Richards Company, Kalamazoo, Mich.

Filed Sep. 20, 1982, Ser. No. 419,977

Int. Cl.³ B21D *9/05*

U.S. Cl. 72—386 **3 Claims**



1. A tool for forming metal including an elongated body member and a pedestal; means pivotally securing said body member intermediate its ends to the top of said pedestal; a workpiece support mounted to said body member adjacent said pivot means; a ram mounted on said body member having

means projecting through one side of said body member adjacent one end thereof; fluid powered means secured to said ram for reciprocating said ram lengthwise of said body member toward and away from said workpiece support; said body member being pivotable about said pivot means between a horizontal position wherein said ram and support extend above the top of said body member and said ram reciprocates horizontally and a vertical position wherein said ram operates vertically; said pedestal being bifurcated including a base and a pair of vertical legs extending upwardly therefrom and defining a central opening therebetween extending through the top thereof, said opening being of a length and width to receive the portion of said body member between said pivot means and the other end when said body member is in said vertical position; locking means for securing said other end of said body member directly to at least one of said legs of said pedestal when said body member is in said vertical position.

4,485,665

DETECTION OF TOXIC VAPORS

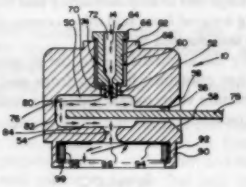
J. James Norman, Ottawa, Canada, assignor to Minister of National Defence of her Majesty's Canadian Government, Ottawa, Canada

Filed Mar. 1, 1976, Ser. No. 663,207

Claims priority, application Canada, May 6, 1975, 226384

Int. Cl.[2] G01N 7/04

U.S. Cl. 73—19 **21 Claims**



1. In a vapour detection apparatus, a sampling head having a main body portion including:

(a) a detection chamber;

(b) means for the insertion of a vapour detector into the detection chamber;

(c) inlet means to the detection chamber, said inlet means including a critical orifice directed towards the detection chamber;

(d) outlet means from the detection chamber;

(e) means for causing a gas to pass through the critical orifice at a jet stream velocity approaching the velocity of sound in that gas at that temperature by co-ordinating the orifice diameter and the pressure drop across the orifice;

(f) a vapour detector adapted to be positioned in said chamber via said insertion means; and

(g) an air by-pass means interconnecting said inlet means and said outlet means, such that in operation most of the air stream is directed from said critical orifice, against but not through the detector, and through the air by-pass means to said outlet means.

4,485,666

GAS ANALYZER

John C. Higgins, Edinburgh; Harvie R. C. Wright, Livingston, and David Trainer, Prestwick, all of Scotland, assignors to Coal Industry (Patents) Limited, London, England

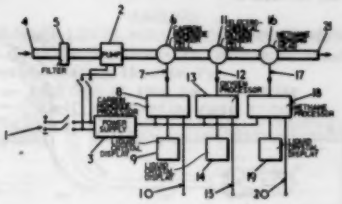
Filed Aug. 18, 1982, Ser. No. 409,149

Claims priority, application United Kingdom, Sep. 11, 1981, 8127537

Int. Cl.[3] G01N 27/16, 27/26

U.S. Cl. 73—23 **4 Claims**

1. A portable gas analyser capable of simultaneously determining carbon monoxide, oxygen and methane, comprising a single gas inlet, feeding means connecting with said inlet, first, second and third gas analysing means each disposed along a single gas path, for deriving a signal indicative of the concentration of one of the gases carbon monoxide, oxygen and methane, and connecting with the inlet, said first and second analysing means each comprising an electrochemical cell and said third analysing means comprising a pellistor, said feeding



means comprising means for drawing a sample of gas through the inlet and feeding it successively through said first, second and third gas analysing means, and means for continuously displaying and/or transmitting and/or recording the concentrations of said gases, derived from the signal from each gas analysing means.

4,485,667

METHOD, SENSOR AND DEVICE FOR DETECTING TRACE QUANTITIES OF GASES IN A GASEOUS MEDIUM

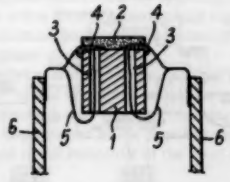
René Lalauze, Saint-Etienne; Christophe Pijolat, Vaulx-en-Velin, and Jean-Paul Couput, Saint-Etienne, all of France, assignors to Association pour la Recherche et la Developpement des Methodes et Processus Industriels (Armines), France

Filed Sep. 29, 1982, Ser. No. 428,439

Claims priority, application France, Oct. 16, 1981, 81 19536

Int. Cl.[3] G01N 27/00

U.S. Cl. 73—23 **12 Claims**



1. A method for detecting trace quantities of gases or gaseous impurities in an atmosphere by measuring the electrical conductivity of a sensor fabricated from a metal oxide selected from the group comprising SnO_2 and NiO at a maximum temperature of approximately 500° C. and processed, prior to utilization, by exposure to a flow of gas containing an activating gas selected from the group comprising SO_2 and H_2S at substantially the same temperature, with a maximum of approximately 550° C., in which method said sensor is placed in a detector device in which it is heated and exposed to an atmosphere to be monitored.

4,485,668

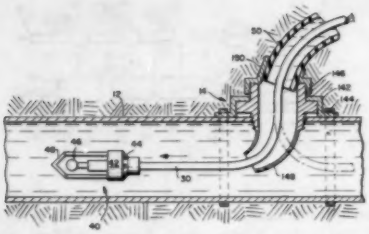
LEAK DETECTOR FOR PRESSURIZED PIPES

James H. Hudson, Sunrise, Fla., and Arthur W. Otto, deceased, late of Lighthouse Pt., Fla. (by Christine Otto, administratrix), assignors to Leak Detective, Inc., Sunrise, Fla.

Filed Sep. 30, 1982, Ser. No. 431,688

Int. Cl.³ G01M *3/24*

U.S. Cl. 73—40.5 A **20 Claims**



1. A leak detector device for use in detecting leaks in pressurized water mains comprising:

detector means which can travel an extended distance inside said water mains when same have been depressurized;

insertion coupling means attachable to said mains at spaced points therealong to permit entry of said detector means into the mains after depressurization thereof;

further means for effecting movement of the detecting means lengthwise of the depressurized mains in one or the other of each direction thereof; and

additional means for effecting both reverse movement of the detector means and for making electrical connections therewith.

4,485,669

DEVICE FOR DETERMINING THE TIMELY DELIVERY OF COMPRESSED GAS FROM COMPRESSED-GAS CONTAINERS

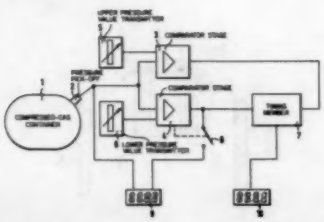
Josef Schmitt, Dänischhagen, Fed. Rep. of Germany, assignor to Krupp MaK Maschinenbau GmbH, Kiel, Fed. Rep. of Germany

Filed Dec. 10, 1982, Ser. No. 448,676

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1981, 3152013

Int. Cl.³ G01L *23/00*

U.S. Cl. 73—167 **4 Claims**



1. In a submarine subjected to variations in submersion depths, a device for determining the timely delivery of compressed gas from a compressed-gas container for ejection and discharge tubes in which the compressed gas is supplied via a system-controlled blowout valve comprising:

(a) a compressed-gas container having a pressure pick-off with a pressure gauge and a converter for producing an electrical signal representing the actual pressure value;

(b) a pair of adjustable transmitters arranged for setting predetermined upper and lower pressure values, respectively, and for generating electrical signals corresponding to said predetermined upper and lower pressure values, respectively;

(c) a pair of comparator stages and means connecting said respective comparator stages to respective of said adjustable transmitters and to said pressure pick-off such that one of said comparator stages receives said electrical signal corresponding to said predetermined upper pressure value and said electrical signal corresponding to said actual pressure value and the other of said comparator stages receives said electrical signal corresponding to said predetermined lower pressure value and said electrical signal corresponding to said actual pressure value;

(d) said one comparator stage being adapted to generate an electrical signal when said actual pressure value falls below said predetermined upper pressure value and said other comparator stage being adapted to generate an electrical signal when said actual pressure value is reduced to said predetermined lower pressure value; and

(e) a timing member having a running time indicator and means connecting said timing member to each of said comparator stages such that said timing member receives said respective electrical signals from said comparator stages;

(f) said timing member being adapted to start measuring elapsed time upon receiving a signal from said one comparator stage and to stop measuring said elapsed time upon receiving a signal from said other comparator stage and to indicate said elapsed time;

(g) whereby the elapsed time for the pressure in said compressed-gas container to drop from said predetermined upper pressure value to said predetermined lower pressure value is indicated.

4,485,670

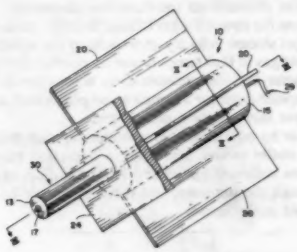
HEAT PIPE COOLED PROBE

Charles J. Camarda, Newport News, and Lana M. Couch, Mathews, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 13, 1981, Ser. No. 234,222

Int. Cl.³ G01L *19/04*

U.S. Cl. 73—179 **13 Claims**



1. A heat pipe cooled probe comprising:

probe means for sensing in a thermally hostile environment;

heat pipe means forming a part of said probe means;

said heat pipe means including first means for absorbing heat in a high temperature area of the probe and conducting it to an area of lower temperature;

said heat pipe means including second means for dissipating heat from the area of lower temperature; and

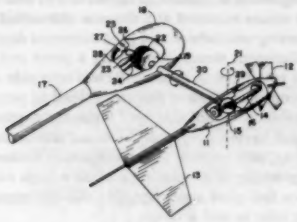
said heat pipe means including capillary artery means for allowing a working fluid to flow directly from said low temperature area to said high temperature area.

4,485,671

MINIATURE ELECTRO-OPTICAL AIR FLOW SENSOR

David D. Kershner, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 14, 1983, Ser. No. 484,745
Int. Cl.[3] G01C *21/10, 23/00*
U.S. Cl. 73—187 7 Claims



1. A flow direction and airspeed sensor for use on an aircraft comprising:

a boom for attachment to the surface of an aircraft at one end of the boom;

a first shaft mounted at the other end of said boom for rotation with one end of said first shaft extending away from said boom;

a hollow vane including a propeller with a second shaft attached for rotation with said propeller and extending into the hollow of said vane;

a sphere attached to said second shaft inside said vane for rotation with said second shaft;

means for mounting said vane on said one end of said first shaft such that the centerlines of said first and second shafts are perpendicular to each other and intersect at the center of said sphere and such that said vane is free to rotate about a yaw axis through the center of said sphere and perpendicular to each of the said centerlines of said first and second shafts; and

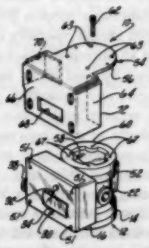
electro-optical means for measuring the rotational speed of said second shaft and for measuring the angular attitude of said vane about said yaw axis.

4,485,672

TAMPER-PROOF COVER FOR FLUID FLOW MONITOR

Lars O. Rosaen, Hazel Park, Mich., assignor to Universal Filters, Inc., Hazel Park, Mich.

Filed Sep. 30, 1982, Ser. No. 431,345
Int. Cl.[3] G01F *15/14*
U.S. Cl. 73—273 12 Claims



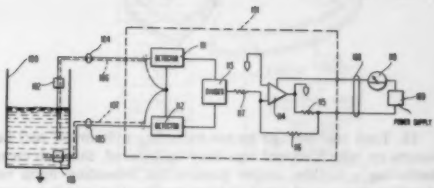
1. A tamper-proof fluid flow monitor cover assembly sealingly engageable with a component of a fluid flow system, said system comprising at least one fluid flow monitor, and said monitor cover assembly comprising a guard portion at least partly disposed about said flow monitor when said monitor cover assembly is sealingly engaged with said component of said system, wherein said monitor cover assembly comprises a plate sealingly engageable with said component of said system, said plate being affixed to said guard portion, whereby said guard portion restricts access to said flow monitor when said monitor cover assembly is sealingly engaged with said system.

4,485,673

TWO-WIRE LEVEL MEASURING INSTRUMENT

David M. Stern, Merion Station, Pa., assignor to Drexelbrook Engineering Company, Horsham, Pa.

Filed May 13, 1981, Ser. No. 263,351
Int. Cl.[3] G01F *23/26;* G01R *27/00*
U.S. Cl. 73—304 C 6 Claims



1. The method for providing a signal indicative of the level of a material having a dielectric constant within a vessel comprising the steps of:

providing first and second capacitive probe means disposed within said vessel, said first probe means being adapted to provide a signal substantially proportional to the dielectric constant of said material, and said second probe means being adapted to provide a capacitance signal proportional to the level of said material within said vessel; and

dividing said signal proportional to the level of said material by said signal proportional to the dielectric constant of said material to derive a signal proportional to the true level of said materials independent of dielectric constant, wherein said division step is performed by:

supplying a first predetermined initial value to integrator circuit means;

supplying said signal indicative of the dielectric constant of said materials to said integrator circuit means;

measuring the time taken for said integrator circuit to reach a second predetermined value by counting clock pulses in a counter in a first direction during said supplying of said signal indicative of the dielectric constant of said materials to said integrator circuit means;

thereafter supplying said signal proportional to the level of said material to said integrator circuit for an equal length of time, measuring said time by counting clock pulses supplied to said counter in the opposite direction during supply of said signal indicative of the level of said materials;

measuring the output of said integrator circuit means after passage of said time; and

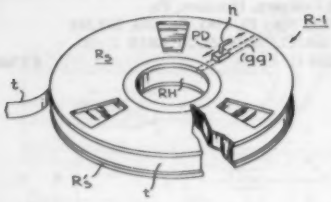
comparing said measured value of said integrator and said initial condition of said integrator, to determine the ratio thereof, said ratio being equivalent to the ratio between said signal indicative of the dielectric constant of said material and said signal indicative of the level of said material, whereby said ratio is independent of the dielectric constant of said material and of individual operating characteristics of said integrator circuit means, and outputting said ratio as the result of said division step.

4,485,674

ELECTROMECHANICAL MEANS FOR DETERMINING SIGNATURE FOR REELED WEB

Herbert U. Ragle, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 053,304, Jun. 29, 1979, Pat. No. 4,337,659. This application Jan. 25, 1982, Ser. No. 342,242
The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.
Int. Cl.³ G11B *5/00, 5/74*
U.S. Cl. 73—432 R **19 Claims**



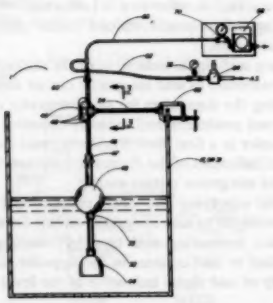
15. Tape reel storage means including cylindrical reel hub means on which record tape may be spooled, this hub means including a hollow center portion for mounting upon reel rotation means; and a pair of sides mounted on said hub means and adapted to confine and protect the tape as wrapped; at least one of said sides being arranged to include reference edge means adapted to establish a reference-locus against which the wrapped edge position of the tape loops may be compared, this side also being adapted to accommodate a signature detect means and signature detect means operating associatively with said hub means and adapted to scan the coiled edges of said tape to detect the relative positions thereof.

4,485,675

PNEUMATIC FLUID DENSIOMETER

Willie M. Verret, Rte. 2, Box 425G, St. Martinville, La. 70582

Filed Sep. 17, 1982, Ser. No. 419,157
Int. Cl.³ G01N *9/26*
U.S. Cl. 73—439 **11 Claims**



1. An apparatus for determining density of a drilling fluid in a fluid containing tank at an oil rig, comprising:

a. a single pneumatic tube submersed at a predetermined depth in said drilling fluid, said tube having at one end a check-valve means fluidly communicating with said drilling fluid in said tank, said tube further communicating with a source of pressurized air and a pressure recorder means at the other end;

b. air supply conduit means for connecting said pneumatic tube to said source of pressurized air;

c. conduit means for connecting said pneumatic tube to said pressure recorder means fluidly communicating with said air supply conduit means and said pneumatic tube;

d. means for constantly maintaining said pneumatic tube at said predetermined depth in said drilling fluid;

e. control means for delivering and maintaining a constant and equal rate of air flow into said tube;

f. readout means for displaying the density of the drilling fluid;

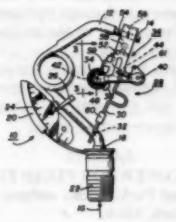
g. means for maintaining said pneumatic tube in substantially vertical alignment in relation to the surface of said drilling fluid, said means mounted at a distance above said means for maintaining said tube at said predetermined depth, said vertical alignment means comprising a pivot rod means connected to a fixation means attached to a side wall of said fluid containing tank at one end, extending perpendicularly in relation to said side wall inwardly in relation to said tank and having a vertically oriented plate attached at its other end, said vertical alignment means further comprising a plurality of annularly grooved wheels rotatably mounted on said plate and adapted to slidably engage said pneumatic tube in said grooves.

4,485,676

MOVEMENT SUPPORT BRACKET FOR A PRESSURE GAUGE

James S. Wilson, Thomaston, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 7, 1983, Ser. No. 472,698
Int. Cl.³ G01L *7/04*
U.S. Cl. 73—741 **7 Claims**

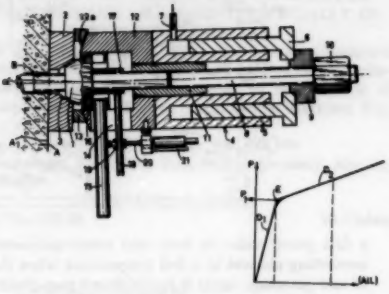


1. In a pressure gauge including a mechanical movement for driving a pointer from displacement motion of a condition responsive element, said movement including input means adapted to receive displacement motion from said condition responsive element, output means operably coacting with said input means for effecting an output displacement correlated to the input motion received by said input means and a frame supporting said movement and including generally parallel side legs spreadable to receive and retain first and second spaced apart rotatable shafts of said movement, each of said shafts being transversely supported in a snap-in relation directly journalled between said side legs, the improvement comprising said frame being of a generally Y-shape configuration of integral composition including said side legs and a foldover elongated tab joined with said side legs as an integral extension thereof from the vicinity of their inward ends, said tab extending in a direction away from said side legs to provide a distended surface sufficiently removed from the movement supported between said side legs to enable securing the frame and the supported movement in operating relation within said gauge.

4,485,677
DEVICE FOR TENSIONING PRE-STRESS BARS AND FOR DETERMINING THIS TENSION

Bernard Amelot, Epernon, and Jean Ducreux, Champigny, both of France, assignors to Freyssinet International (STUP), Boulogne-Billancourt, France

Filed Jun. 4, 1982, Ser. No. 385,293
Claims priority, application France, Jun. 9, 1981, 81 11305; Jan. 11, 1982, 82 00295
Int. Cl.³ G01L 5/00
U.S. Cl. 73—761 10 Claims



1. In a device for tensioning a bar having an axis and embedded in an element to be pre-stressed and having a threaded end projecting from an end face of said element, a traction apparatus having an axis and a movable part attached to said rod and a fixed part, said fixed part having one end proximate said element, a first bearing plate mounted against said end face and having a first annular spherical cup part, a nut engaged on said threaded end and having a first spherical ball part bearing against said first annular spherical cup part thereby forming a first swivel joint, the improvement in said device comprising a second bearing plate slidably disposed on an outer face of said first bearing plate, said second bearing plate having a second annular spherical cup part, said one end of said fixed part having a second spherical ball part bearing against said second annular spherical cup part of said second bearing plate, thereby forming a second swivel joint for permitting the axis of said traction apparatus to become substantially coaxial with the axis of said bar upon said traction apparatus applying tension on said bar.

10. A method for determining the tension of a pre-stressing bar with a threaded end projecting from an end face of an element to be pre-stressed, with a jack having a movable part attached to said bar end and a fixed part having one end proximate said element, there being a first bearing plate mounted against said end face and having a first annular spherical cup part, a nut engaged on said threaded end and having a first spherical ball part bearing against said first annular spherical cup part thereby forming a first swivel joint, and there also being a second bearing plate slidably disposed on an outer face of said first bearing plate, said second bearing plate having a second annular spherical cup part, said one end of said fixed part having a second spherical ball part bearing against said second annular spherical cup part of said second bearing plate thereby forming a second swivel joint, comprising the steps of:

applying increasing jack pressure on said bar, thereby increasing the tension therein;

plotting on a diagram a first straight line of increasing jack pressure versus elongation of the bar for that portion of the bar between the nut and the point of attachment of said bar to said movable part of said jack, prior to sufficient tension being imposed in said bar by said jack to draw said nut out of seating relationship with said first annular spherical cup part;

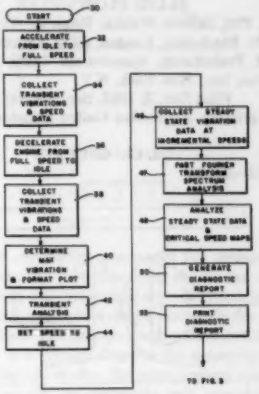
plotting on the same diagram as the first straight line, a second straight line of increasing jack pressure versus elongation of the bar for the entire bar after said nut is drawn by sufficient jack pressure out of seating relationship with said first annular spherical cup part; and

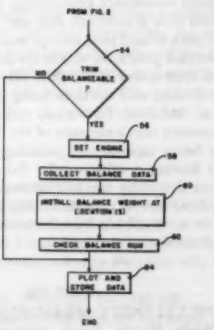
determining the value of jack pressure at the intersection of said first and second straight lines, such value corresponding substantially to the tension in said bar.

4,485,678
ROTOR DIAGNOSTIC AND BALANCING SYSTEM

Frank Fanuele, Albany, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Sep. 27, 1982, Ser. No. 423,503
Int. Cl.³ G01H 1/00
U.S. Cl. 73—660 6 Claims


START
ACCELERATE FROM IDLE TO FULL SPEED
COLLECT TRANSIENT VIBRATIONS & SPEED DATA
DECELERATE ENGINE FROM FULL SPEED TO IDLE
COLLECT TRANSIENT VIBRATIONS & SPEED DATA
DETERMINE MAP VIBRATION & FORMAT PLOT
TRANSIENT ANALYSIS
SET SPEED TO IDLE
COLLECT STEADY STATE VIBRATION DATA AT INCREMENTAL SPEEDS
FAST FOURIER TRANSFORM SPECTRUM ANALYSIS
ANALYZE STEADY STATE DATA & CRITICAL SPEED MAPS
GENERATE DIAGNOSTIC REPORT
PRINT DIAGNOSTIC REPORT
TO FIG. 3



1. A method of providing data for use in diagnosing and balancing a rotor, comprising the steps of:

(a) generating vibrational data from a plurality of vibration sensors positioned about a rotor during rotation of the rotor;

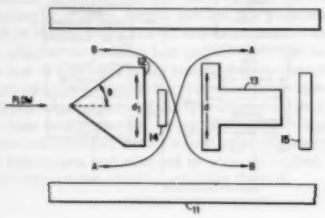
(b) generating rotational data from rotational sensors corresponding to the rotation of the rotor;

(c) synchronizing the vibrational data with the rotational data and determine the maximum vibration at respective vibration sensors as the rotor accelerates and decelerates at predetermined intervals;

(d) providing means for comparing the maximum vibrational outputs from the vibration sensors with a predetermined standard to ascertain the probable location of and reason for the vibration sensed;

(e) increasng and decreasing the rotor's rotation in a continuous fashion and monitoring the vibrational data for discontinuity of vibrational signals from the vibration sensors;
(f) monitoring the steady state vibrational data as the rotors rotate at predetermined intervals generating a time-to-frequency spectrum of the components of the steady state vibrational data;
(g) extracting from the spectrum the synchronous components thereof which correspond to predetermined critical speeds of the components of the rotor; and
(h) providing means for generating a data output of the probable location and cause of vibrations in the rotor based upon the data obtained in steps d, e, f and g herein.

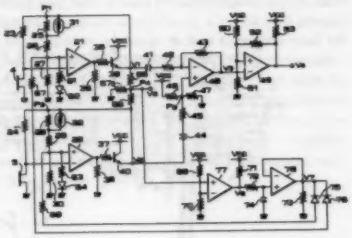
4,485,679
FLUID FLOWMETER
Gillies D. Pitt, Saffron Walden; Roger J. Williamson, Harlow; David N. Batchelder, London, all of England, and Arulanandam M. Prabakaran, Ayanavaram, India, assignors to ITT Industries, Inc., New York, N.Y.
Filed Dec. 2, 1982, Ser. No. 446,158
Claims priority, application United Kingdom, Dec. 10, 1981, 8137226
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.22 **5 Claims**



1. A vortex flowmeter comprising: a pipe section through which a fluid flow is directed; first and second bodies disposed in the fluid path in said pipe section and in respective upstream and downstream positions; means for detecting vortices generated by the interaction of the fluid flow with the combination of the two bodies, said vortices being generated at a rate proportional to the fluid flow rate; means for translating said vortex frequency into a measure of the fluid flow rate, said first bluff body being tapered and pointing upstream, said second bluff body having a substantially flat surface normal to the flow; vortex detecting means disposed between the first and second bodies; and vortex detecting means disposed downstream of the second body by a distance between three and five times the diameter of that body.

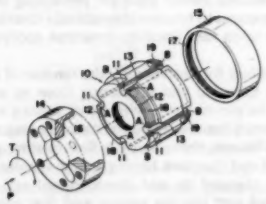
4,485,680
FLOW VELOCITY MEASURING APPARATUS
Shunichi Wada, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 3, 1982, Ser. No. 446,763
Claims priority, application Japan, Mar. 15, 1982, 57-43557
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.22 **4 Claims**

1. A flow velocity measuring apparatus comprising:
a vortex-generating member disposed in flow path of fluid to be measured;
at least one temperature-resistance converting element placed in a position being capable of contacting with vortexes which are produced at the downstream side of said vortex-generating member;
a bridge circuit including said temperature-resistance converting element as a side of said bridge circuit;
an amplifier circuit for amplifying the output of said bridge circuit to send out a detection signal which has a frequency corresponding to the periodical change in the temperature of said element due to the cooling action by means of said vortexes;
a feedback circuit for supplying feedback current corresponding to the voltage of said detection signal to keep the temperature of said temperature-resistance converting element at a desired variable temperature; and
a comparator for providing one of a high level H or a low level L to maintain an input end of said amplifier circuit at



a first preset value to keep said temperature-resistance converting element at a first temperature when the level of said detection signal is lower than a prescribed preset value, whilst providing the other of a high level H or a low level L to maintain the input end of said amplifier circuit at a second preset value to keep said temperature-resistance converting element at a second temperature higher than said first temperature when the level of said detection signal is higher than said prescribed preset value.

4,485,681
THRUST-TORQUE DETECTOR
Yotaro Hatamura, 2-12-11 Kohinata, Bunkyo-ku, Tokyo, Japan
Filed Oct. 6, 1982, Ser. No. 433,108
Claims priority, application Japan, Nov. 24, 1981, 56-188125
Int. Cl.³ G01L *5/16*
U.S. Cl. 73—862.04 **8 Claims**



1. A thrust-torque detector, comprising:
a tubular member having a longitudinally extending central axis, opposite end surfaces, and a central longitudinally extending opening, said tubular member including:
a first set of parallel first spring-like elastically supported structural portions which are deformable by an axial thrust force and positioned opposite each other, and
a second set of radially extending second spring-like elastically supported structural portions which are deformable by a torque about said axis and positioned opposite each other;
said tubular member having at least one first slit therein, extending circumferentially about said central axis, and at least two longitudinally extending second slits;
said first set of first structural portions and said second set of

said second structural portions surrounding said central axis and said central opening;

the second structural portions of said second set being located at opposite circumferential sides of said at least one first slit on opposite sides of said tubular member;

the first structural portions of said first set being located at opposite longitudinal sides of each of said second slits;

the overall longitudinal extent of one of said first set and said second set including all of the longitudinal extent of the other of said first set of said second set.

4,485,682

TRANSDUCER FOR TORQUE AND/OR ANGULAR DISPLACEMENT MEASUREMENT, ESPECIALLY IN POWER SCREWDRIVERS

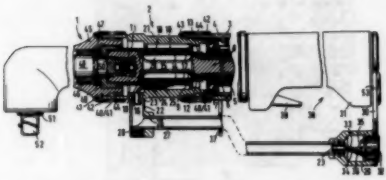
Reinhold Stroezel, Leinfelden; Wilhelm W. Schwarze, Stuttgart; Karl Roll, Leinfelden; Alfred Hettich, Leinfelden-Echterdingen, and Wolfgang Raidt, Neuhausen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,999

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1982, 3214889

Int. Cl.³ G01L *3/02, 5/24*

U.S. Cl. 73—862.36 **10 Claims**



10. An arrangement for mesuring torque transmitted and/or relative angular displacement about an axis, between a driving and a driven member, of which the driving member is rotatably mounted on a support including a housing having a handgrip portion, especially a housing of a power tool such as a power screwdriver, comprising a transducer casing having a through opening; a torsionally deformable member supported in said casing for rotation about a central axis thereof and having two axially spaced end portions; means for so mounting said transducer casing on said support that one of said end portions is connected to the driving member and the other to the driven member; means for influencing magnetic fields in said casing in the vicinity of said deformable member, including two substantially tubular slotted elements of different diameters so mounted one on said one and the other on said other end portion of said torsionally deformable member as to at least partially overlap and surround one another and as to share in the relative angular displacement of said end portions about said central axis when said torsionally deformable member is subjected to torsion; means for detecting magnetic field changes in said casing resulting from the relative angular displacement of said slotted elements; an electric cable connected to said detecting means and passing through said opening in said casing to the exterior of said casing; means for receiving said cable, including a tube extending from said opening of said casing at the exterior of the latter and at a predetermined distance from said handgrip portion of said housing along the latter so as to serve to protect the hand of the user gripping said handgrip portion, and having an end portion remote from said opening; a sleeve-shaped member mounted on said end portion of said tube; a bracket connected to said support and to said sleeve-shaped member to support the latter on said support; and an electric receptacle mounted on said sleeve-shaped member, electrically connected to said cable, and operative for receiving a plug of an additional cable leading away from the arrangement.

4,485,683

INSTRUMENT FOR MEASURING THE CLAMPING FORCE BETWEEN A PAIR OF WELDING ELECTRODES

Bertil Hass, Olofström, Sweden, assignor to AB Volvo, Goteborg, Sweden

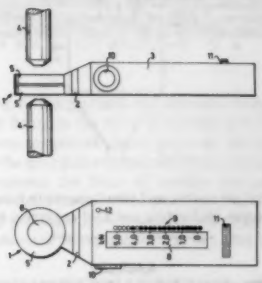
PCT No. PCT/SE81/00386, § 371 Date Aug. 18, 1982, § 102(e) Date Aug. 18, 1982, PCT Pub. No. WO82/02163, PCT Pub. Date Jul. 8, 1982

PCT Filed Dec. 21, 1981, Ser. No. 414,260

Claims priority, application Sweden, Dec. 23, 1980, 8009094

Int. Cl.³ G01D *1/12*; G01L *1/22*

U.S. Cl. 73—862.53 **4 Claims**



1. In a portable measuring instrument for measuring the clamping force between a pair of welding electrodes, comprising a force measuring cell including a wire strain bridge which is insertable between a pair of welding electrodes for measuring the clamping force therebetween and which coacts with a pair of electrodes in a voltage detector for detecting voltage between the welding electrodes; the improvement comprising visible indicating means, an electronic unit connecting said measuring cell and voltage detector to said indicating means, said indicating means indicating clamping force applied by said welding electrodes electrodes, the voltage detector being adapted to send to the electronic unit an impulse when a voltage appears between the welding electrodes, to cause the optical indicating means to indicate the value of the clamping force at the moment the voltage appears, said electronic unit being adapted to retain this value on the indicating means regardless of changes in the clamping force after the voltage appears.

4,485,684

APPARATUS FOR EXTRACTING AND ANALYSING DUST-LADEN GAS SAMPLES

Rudolf Weber, Oelde, and Horst Riedel, Vorhelm, both of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed Oct. 18, 1982, Ser. No. 435,109

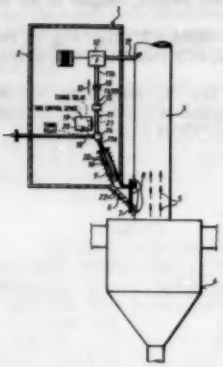
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1981, 8132855[U]

Int. Cl.³ G01N *1/22*

U.S. Cl. 73—863.12 **9 Claims**

1. In an apparatus for extracting and analyzing samples of dust-laden air from an exhaust gas line of a heat exchanger and including a gas extraction connection in communication with said exhaust gas line, a gas extraction probe, an analyzer, a gas sample pipe communicating with said gas extraction connection for conducting gas samples between said probe and said analyzer, a gas exhaust pipe communicating with said analyzer for exhausting gas remote from said gas extraction connection, and a switch valve in said pipe, the improvement wherein said gas extraction connection comprises a stilling chamber; said switch valve comprises a three-way valve in communication with said gas sample pipe between said probe and said analyzer

and with a source of compressed cleansing air; and time control means operable to establish communication between said



probe and said air source and simultaneously interrupt communication between said probe and said analyzer, and vice-versa.

4,485,685

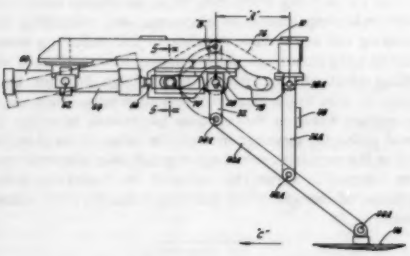
STRAIGHT LINE LINK MECHANISM

Irvin D. Bond, 10270 Allen Rd., Clarkston, Mich. 48016

Continuation-in-part of Ser. No. 256,390, Apr. 22, 1981, Pat. No. 4,400,985. This application Apr. 16, 1982, Ser. No. 368,992

Int. Cl.³ F16H *21/04*

U.S. Cl. 74—103 **5 Claims**



1. A straight line link mechanism comprising:

a support;

a first link;

first pivot means connecting the first link to the support for pivotal motion;

a second link;

second pivot means connecting the second link to the support for pivotal motion, the second pivot means being disposed a first distance from the first pivot means;

a third link;

third pivot means connecting the third link to the first link for relative pivotal motion a distance from the first pivot means of about one-half said first distance;

fourth pivot means connecting the third link for relative pivotal motion to the second link a distance from said third pivot means of about 1.25 times said first distance;

said fourth pivot means being connected to the third link a distance from the second pivot means of about 1.25 times said first distance;

a controlled member, and means pivotally connecting the controlled member to the third link a distance of about 1.25 times said first distance from the fourth pivot means;

an actuator means including a cylinder mounted on the support, and a piston rod extensible from the cylinder at a uniform rate of motion; and

cam means connecting the first pivot means to the piston rod to pivot the first link from a first position to a second position such as the first link is moved by the actuator means in a pivotal motion with respect to the support, the controlled member is moved along a substantially linear path of motion.

4,485,686

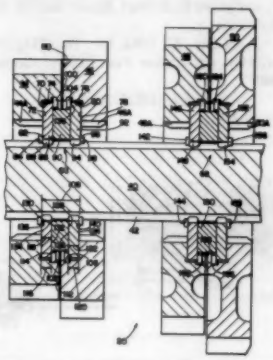
GEAR RETAINER

Richard E. Olmstead, Jr., Plainwell, and Terry E. Teeter, Mattawan, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 25, 1982, Ser. No. 361,938

Int. Cl.³ F16H *3/08, 57/00*

U.S. Cl. 74—331 **17 Claims**



1. A change gear transmission of the type having a mainshaft, first and a second radially floating mainshaft gears encircling said mainshaft and axially positioned close together, a plurality of substantially identical countershafts having countershaft gears supporting said mainshaft gears and driving said mainshaft gears at different relative rotational speeds, and clutch means selectively operative to clutch said mainshaft gears to said mainshaft one at a time;

said first mainshaft gear axially spaced from said second mainshaft gear in a first axial direction, said first mainshaft gear defining a first pocket therein defined by a first radially extending thrust surface axially facing said second gear and a first inner diameter surface, said second mainshaft gear defining a second pocket therein facing said first gear defined by a second radially extending thrust surface facing said first gear and a second inner diameter surface; and

thrust means axially fixed to said mainshaft and rotatable therewith for axially retaining said first and second mainshaft gears relative to said mainshaft, said thrust means comprising; thrust washer means rotatable with said mainshaft, means to axially fix said thrust washer to said mainshaft, said means to axially fix said thrust washer means to said mainshaft rotatable with said mainshaft and permitting assembly and disassembly of said thrust washer means from said mainshaft from either axial direction on said mainshaft, said thrust washer means defining a third radially extending thrust surface engageable by said first thrust surface and a fourth thrust surface engageable by said second thrust surface, said third and fourth radially extending thrust surfaces having an axial separation preventing engagement of said first and second mainshaft gears, means interconnecting said first mainshaft gear to said thrust washer means to limit axial movement of said first mainshaft gear in the first axial direction relative to

said thrust washer means and means axially interconnecting said second mainshaft gear to said thrust washer means to limit axial movement of said second mainshaft gear relative to said thrust washer means, said thrust washer means received generally in the space defined by said first and second pockets and having an outer diameter surface less than the inner diameter of said first and second inner diameters surfaces whereby said thrust washer means will allow radially floating movement of said mainshaft gear relative to said mainshaft.

4,485,687

ROTARY TRANSMISSION

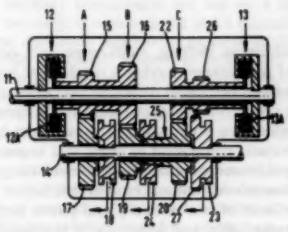
John P. Burke, Leamington Spa, and Alastair J. Young, Kenilworth, both of England, assignors to Automotive Products plc, Leamington Spa, England

Continuation-in-part of Ser. No. 358,434, Mar. 15, 1982, abandoned. This application Jun. 8, 1982, Ser. No. 386,357

Claims priority, application United Kingdom, Mar. 27, 1981, 8109718; Mar. 25, 1982, 8208822

Int. Cl.³ F16H *3/08*

U.S. Cl. 74—358 **8 Claims**



1. A rotary transmission comprising first, second and third gear trains each being one of a set providing a series of increasing speed ratios two clutches independently operable and providing alternative drive paths through the first, second and third gear trains, a common input shaft for the clutches and a common output shaft to which drive from the input shaft is transmitted by the transmission, the gear trains of alternative ratios in the set being driven respectively through one and the other clutch, one said clutch being arranged to drive the output shaft either through a two-wheel gear train or through a three-wheel train of which the first wheel is a gear wheel driven directly from the input shaft, the second wheel is a gear wheel interengaged with the first wheel and journalled on the output shaft and the third wheel is a sleeve wheel journalled on and engageable with the output shaft so that the second wheel drives the output shaft through the sleeve wheel, and the said other clutch being arranged to drive the output shaft either through a two-wheel gear train of which the second gear wheel is provided by the sleeve wheel or through a six-wheel gear train of which all the gear wheels are members of the first, second and third mentioned trains.

4,485,688

CONNECTING ELEMENT FOR LINKAGES, ESPECIALLY AUTOMOTIVE GEARSHIFT LINKAGES

Peter Muth, Nieder-Olm; Wolfgang Hartung, Wiesbaden; Friedhelm Krake, Russelsheim, and Marion Furche, Mainz, all of Fed. Rep. of Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 7, 1983, Ser. No. 472,745

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1982, 3210107

Int. Cl.³ G05G *9/18*

U.S. Cl. 74—473 R **11 Claims**

1. Connecting elements for linkages, especially for gearshift linkages disposed partially in a tubular casing between the transmission and gearshift lever of motor vehicles, said connecting element being in the form of a coupling device located between two gearshift rods and being adapted to permit forward and backward movement of the decoupled gearshift rod after the vehicle has been shifted into a gear, the effective connection between the ends of the gearshift rods being by way of gearing operatively associated with the respective gearshift rod ends, and said gearing being adapted to be put in and out of mesh with one another, the improvement compris-

ing: the gearing on the gearshift rod disposed on the side of the gearshift lever being in the form of internal gearing provided on one or more segmental sleeve portions which are axially coupled with the gearshift rod and which are radially inwardly displaceable against the force of springs through cam like projections provided on the tubular casing or the like, and the gearing being provided on the gearshift rod located on the transmission side and being disposed in the area of the sleeve portions.

4,485,689

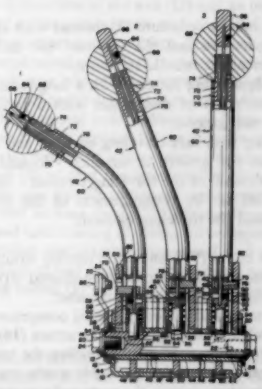
SHIFT CONTROL ASSEMBLY

Emanuel F. Cambria, Tannersville, Pa., assignor to Hurst Performance, Inc., Warminster, Pa.

Filed Jan. 10, 1983, Ser. No. 456,798

Int. Cl.³ B60K *20/00*; F16H *57/06*; G05G *5/10, 11/00*

U.S. Cl. 74—477 **33 Claims**



1. A shift control assembly for an automatic transmission, said assembly comprising:

a housing;

a control shaft rotatably supported in said housing;

a mechanism for transmitting the rotary motion of the control shaft to the automatic transmission to control the gear position of the automatic transmission;

at least two shifting sticks, each of said shifting sticks being independently operatively associated with said control shaft for shifting between at least two gear positions, including at least one drive position; and

at least two manually operable gear selector mechanisms, each of said selector mechanisms selectively and operatively connecting its respective stick to the control shaft to allow the sticks to rotate the control shaft upon shifting

of the sticks in a predetermined sequence and otherwise being uneffective to cause rotation of the control shaft.

4,485,690
AUTOMATICALLY OPENABLE AND RECLOSEABLE PROTECTIVE COVER FOR ELONGATED ELEMENTS HAVING A TRAVELING STRUCTURE PROJECTING THEREFROM

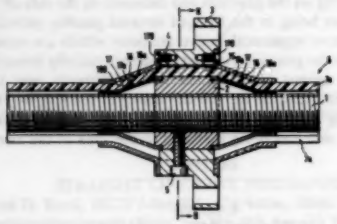
Reinhard Lipinski, Plochingen, and Karl Neff, Waldenbuch, both of Fed. Rep. of Germany, assignors to PROMA Produkt- und Marketing-Gesellschaft m.b.H., Plochingen, Fed. Rep. of Germany

Filed Dec. 7, 1982, Ser. No. 447,522

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1982, 3201058

Int. Cl.³ F16P *1/00*

U.S. Cl. 74—609 **20 Claims**



1. Automatically openable and recloseable protective cover (6) for an elongaged machine member (1), said member having an axially traveling element (2, 3) thereon, in which the cover is arranged for passage of the traveling element, said cover opening in advance of the element and reclosing therebehind, having

an elongated tubular structure (7) formed with at least one continuous longitudinal slit (8), said slit defining two facing edges of the tubular structure,

one of said edges being formed with a longitudinal groove (10) and the other of said edges with a projecting rib fitting into said groove;

means traveling with said traveling element and separating the rib from the groove in advance - looked at in the direction of travel of the traveling element - thereof, and reclosing said slit by reengagement of the rib into the groove behind the traveling element;

and wherein

the protective cover (7) is an elastic tubular structure forming, in cross section, a closed ring-shaped structure entirely surrounding the machine member;

and the separating and reclosing means comprises

a double funnel-shaped double cone structure (16), of essentially circular cross section surrounding the tubular protective cover and forming a double guide cone for the tubular protective cover in the region of separation and in the region of reclosing of the projecting rib (9) and the groove (10).

the double cone having the smaller cone portions facing in opposite direction.

said tubular structure being expandable in cross section in the region of said traveling element (2, 3) by opening of the slit upon separation of the rib from the groove to permit passage of at least a portion of the traveling element through the slit, said tubular structure being radially compressible to permit reclosing of the slit behind the traveling element,

so that the machine member is totally enclosed by the tubular structure in advance and behind the traveling element, and in the region of the traveling element by the double funnelshaped double cone structure (16).

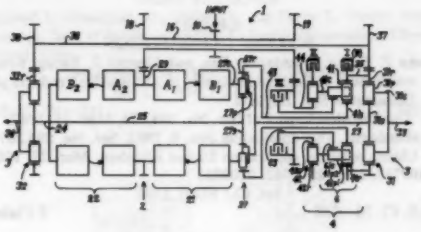
4,485,691
SIMPLIFIED HYDROMECHANICAL STEERING TRANSMISSION

Bradley O. Reed, Pittsfield, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 26, 1982, Ser. No. 411,903

Int. Cl.³ F16H *47/04, 37/06, 1/42*

U.S. Cl. 74—687 **9 Claims**



1. In a synchronous shifting, multi-range, split output, hydromechanical transmission having a mechanical input drive train, a hydrostatic component driven by said input drive train for producing a hydrostatic output, mechanical means defining plural independent power paths driven by said input drive train and said hydrostatic component to cause said transmission to be a split output transmission and a set of combining gears for producing a transmission output responsive to inputs received from either or both of two of said plural power paths of the split output transmission, and wherein said mechanical means includes a first power path mechanism interconnecting a first element of said combining gears with at least said hydrostatic component for causing the transmission to operate in one range; a range change mechanism included within said mechanical means constituting a second of said power paths of the split output transmission for causing the transmission to operate in two additional ranges having torque ratios distinct from each other and from that of said one range, said range change mechanism comprising:

(a) a compound planetary gear set including:

(1) a single planetary carrier,

(2) a plurality of sets of planetary pinions mounted on said planetary carrier, and

(3) a plurality of sun and ring gear elements meshing with said pinions, said plurality of elements including elements responsive to said mechanical input drive train and to said hydrostatic output and including an element connecting said compound planetary gear set to a second element of said combining gears,

for selectively operating in two modes to produce a first hydromechanical output which is a function of said hydrostatic output and a mechanical input which is a reduction from that of said mechanical drive train and to produce a second hydromechanical output which is a function of said hydrostatic output and a mechanical input which is received directly from said mechanical drive train and for selectively transferring those hydromechanical outputs to said second element of said combining gears; and

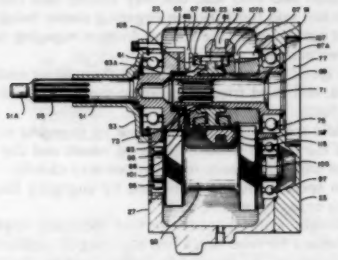
(b) friction devices for selectively activating and inactivating selected elements of said plurality of sun and ring gear elements to cause said range change mechanism constituting said second power path to operate in either of said two modes to cause said transmission to operate in either of said two additional ranges or to be locked out of operation to cause said transmission to operate in said one range.

4,485,692

AUXILIARY TRANSMISSION

Jeff D. Moore, 2315 Chapparal Trail, and Eddie C. Moore, 389 Wildwood Ct., both of Mansfield, Tex. 76063

Filed Jun. 17, 1982, Ser. No. 389,243
Int. Cl.[3] F16H *3/02, 3/08*
U.S. Cl. 74—745 1 Claim



1. An auxiliary transmission for use on a motor vehicle having a manually operable clutch and a manual transmission with a gear shift lever and having an input shaft, comprising:

a rotatable input shaft adapted to be coupled to the clutch and a hollow rotatable output sleeve adapted to receive the input shaft of the transmission of the motor vehicle,

a forward gear means connected to said input shaft and having first and second spaced apart external teeth formed thereon,

said second teeth being located rearward of said first teeth,

a hub connected to said output sleeve rearward of said forward gear means for rotation with said output sleeve and having external teeth formed thereon,

a rear gear means rotatably located around said output sleeve rearward of said hub and having third and fourth spaced apart external teeth formed thereon,

said fourth teeth being located rearward of said third teeth,

a counter shaft having forward external teeth at a forward end engaging said first teeth of said forward gear means and rearward external teeth at a rear end engaging said fourth teeth of said rear gear means for rotating said rear gear means,

a collar having internal teeth engaging said external teeth of said hub and engagable with said second teeth of said forward gear means or with said third teeth of said rear gear means,

said collar being movable to a forward position where said internal teeth engage said external teeth of said hub and said second teeth of said forward gear means for causing said output sleeve to be driven at the same rpm as said input shaft is driven,

said collar being movable to a rearward position where said internal teeth engage said external teeth of said hub and said third teeth of said rear gear means for causing said output sleeve to be driven at a rpm different from the rpm at which said input shaft is driven,

control means for moving said synchronizer collar to said forward or rearward positions,

said control means including an electrical motor rotatable in either of two directions,

mechanical apparatus movable by said electrical motor between first and second positions in dependence upon the direction of rotation of said electrical motor,

limit switch means responsive to location of said mechanical apparatus at either said first or second positions for terminating operation of said electrical motor, and

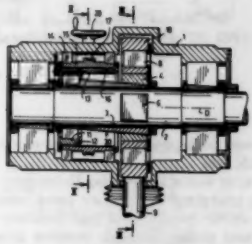
switch means connected to said electrical motor for being attached adjacent the gear shift lever of the manual transmission and having two positions, one position operable to cause said electrical motor to rotate in one direction to move said collar to said forward position and the other position to cause said electrical motor to rotate in a second direction to move said collar to said rearward position.

4,485,693

ECCENTRIC-OPERATED VIBRATING APPARATUS

Hannu Heikkilä, Oulu, Finland, assignor to Oy Tampella AB, Tampere, Finland

Filed Aug. 10, 1981, Ser. No. 291,590
Claims priority, application Finland, Aug. 26, 1980, 802694
Int. Cl.[3] F16H *35/08;* G05G *1/00*
U.S. Cl. 74—836 5 Claims



1. A vibrating apparatus comprising a body (1), a drive shaft (2) rotatably mounted in the body, bushing (3) defining an eccentric (30) supported displaceably along the drive shaft an nonrotatable with respect to the drive shaft, a longitudinal axis (B) of an outer mantle surface (3*b*) of said bushing forming an angle (C) with an axis (D) of the drive shaft, a connecting rod (9) disposed transversely with respect to the drive shaft, a loop-shaped end of said rod (9) being mounted rotatably around the outer mantle surface of the bushing, an adjusting means (11–20) for displacing the bushing (3) along the drive shaft (2) in a direction of the axis (D) and an intermediate ring (4) mounted on the outer mantle surface (3*b*) of the bushing (3), the axis of an inner mantle surface of said ring (4) coinciding with the longitudinal axis (B) of the outer mantle surface of the bushing (3) and an axis of the outer mantle surface of said ring (4) being parallel to the axis (D) of the drive shaft (2), a locking means (5) fixed to said intermediate ring (4) and supported by said drive shaft (2) in grooves (6) on opposite sides of said shaft (2) so as to be slidable in a plane perpendicular to the axis (D) of said shaft (2) so that the intermediate ring (4) is mounted nonrotatably and axially stationary with respect to the drive shaft (2), said locking means (5) having the shape of circle segments and said housing (3) being fork-shaped and extending axially between said locking means and said shaft, the outer mantle surface of said bushing and an outer mantel surface of said locking means (5) defining a cylindrical surface.

4,485,694

ENGINE STARTER CIRCUIT FOR AUTOMOTIVE VEHICLE WITH AUTOMATIC TRANSMISSION

Haruo Mochida, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Oct. 30, 1981, Ser. No. 316,778
Claims priority, application Japan, Jan. 16, 1981, 56-3753
Int. Cl.[3] B60K *41/00, 20/00;* F02N *17/00*
U.S. Cl. 74—850 6 Claims

1. An engine starter circuit for an automotive vehicle with an automatic transmission including a shift lever, which comprises:

(a) a starter switch;

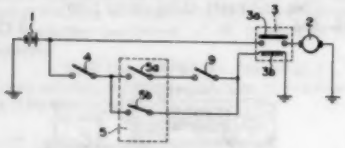
(b) an inhibitor switch including in parallel:

(1) a park-position detection switch adapted to be closed when the automatic transmission is shifted into the part position;

(2) a neutral-position detection switch adapted to be closed when the automatic transmission is shifted into

the neutral position, said inhibitor switch being connected in series with said starter switch;

(c) a redundant park-position detection switch for detecting directly the park position of the shift lever, said redundant park-position detection switch being actuated by the shift lever and being closed when the shift lever is shifted into the park position, said redundant park-position detection switch being connected in series with said starter switch



and said park-position detection switch in said inhibitor switch; and

(d) a starter motor for starting the engine, said starter motor being energized only in two cases which are when all of said starter switch, said park-position detection switch, and said redundant park position detection switch are closed and when both said starter switch and said neutral-position detection switch are closed.

4,485,695

CONTROL APPARATUS FOR AUTOMATIC TRANSMISSIONS

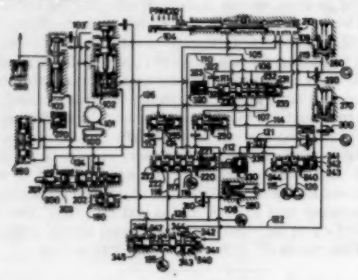
Mutsumi Kawamoto, Nagoya, Japan, assignor to Aisin-Warner Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 147,308, May 6, 1980,. This application Mar. 10, 1983, Ser. No. 473,973

Claims priority, application Japan, May 10, 1979, 54-57734

Int. Cl.³ F16H *3/74*; B60K *41/08*

U.S. Cl. 74—869 **8 Claims**



1. A hydraulic control apparatus for an automatic transmission comprising:

multi-speed shifting means which further comprises a plurality of planetary transmission gear sets and a plurality of friction engaging means for engaging or disengaging members of said gear sets so that at least three forward speeds and a reverse speed are accomplished, said forward speeds including a low speed, a middle speed and a high speed;

a counter shaft being connected to one of said gear sets;

a sun gear shaft adapted to be connected with said counter shaft;

hydraulic control means for controlling, by way of engaging or disengaging, said friction engaging means in accordance with input signals to accomplish the forward multi-speeds and the reverse speed, the hydraulic control means including an oil pressure source and a plurality of shift valves for accomplishing said speeds by selectively feeding and exhausting oil pressure from said oil pressure source to said friction engaging means in response to input signals of vehicle running conditions comprising vehicular speed and throttle openings, wherein said plurality of friction engaging means includes a first and second friction engaging means, a one-way clutch and a third friction engaging means adapted to be connected with said sun gear shaft and with said one-way clutch, said one-way clutch and said third friction engaging means being connected parallel with the second friction engaging means between common members;

said low speed being accomplished by disengaging said first, second, and third friction engaging means and said one-way clutch;

said middle speed being accomplished by engaging at least one of the second friction engaging means and the third friction engaging means with the one-way clutch;

said high speed being accomplished by engaging the first friction engaging means, and

said hydraulic control means further including sequence valve means for receiving a first engaging oil pressure and for controlling, by alternately feeding and exhausting, a second engaging oil pressure to engage or disengage said second friction engaging means, said sequence valve being fluidically connected to first and second of said plurality of shift valves, and including first and second valve elements; first, second and third oil passage means operatively connected to said sequence valve; said sequence valve means including a first oil chamber in which said first valve element is pushed so as to feed, via said first oil passage means, the second engaging oil pressure to the second friction engaging means by applying a third engaging oil pressure via said second oil passage means, said third engaging oil pressure controlling the third friction engaging means so as to be engaged or disengaged; a second oil chamber in said sequence valve in which said second valve element is pushed towards releasing the second friction engaging means upon exhausting the second engaging oil pressure by applying via said third oil passage means the first engaging oil pressure, wherein said first engaging oil pressure controls the first friction engaging means to be engaged or disengaged, and biasing means in said sequence valve for biasing the valve element in a direction for exhausting the second engaging oil pressure; and wherein upon shifting from the low speed to the middle speed, the valve element of said sequence valve is urged in a direction for feeding the second engaging oil pressure to said second friction engaging means when the third engaging oil pressure has arrived at a predetermined level permitting the third friction engaging means to engage, and upon shifting from the high speed to the middle speed the valve element is urged in a direction for feeding the second engaging oil pressure to said second friction engaging means when the first engaging oil pressure has arrived at or below a predetermined level permitting said first friction engaging means to release when said one-way clutch has locked, such that engagement of the second friction engaging means is delayed.

4,485,696

APPARATUS FOR WIRE STRIPPING

Zdzislaw Bieganski, Timber La., Woburn, Bedfordshire MK17 9PL, England

Filed Mar. 17, 1980, Ser. No. 364,940

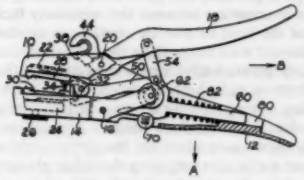
The portion of the term of this patent subsequent to Aug. 4, 1999, has been disclaimed.

Int. Cl.³ H02G *1/12*

U.S. Cl. 81—9.5 A **10 Claims**

1. Apparatus for wire stripping comprising inner cutting jaws (**28, 30**) located between outer gripping jaws (**10, 14**), a lever (**18**) mechanism for closing the jaws, and an actuator (**50**) coupled to the cutting jaws so that movement of the actuator

generally along the axis (B) of the cable displaces the cutting jaws, the actuator providing a cam for at least closing the gripping jaws, characterised in that the actuator is arranged for lateral movement (A) as well as movement along the direction of the cable axis, and the lever mechanism includes a link (54) for initially causing actuator cam movement to close the jaws and after a transition point allowing the cam to move relative to the jaws for the following jaw displacement, said link (54)



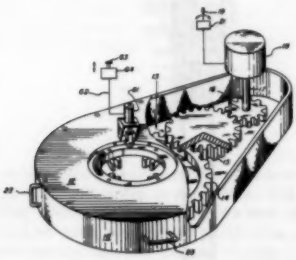
being pivoted at each end to the lever (18) and to the actuator respectively, and being inclined at an angle to the axis of the cable at all times, so that vector components of force applied in lever movement will urge and displace the actuator laterally at the beginning of the lever movement thus moving the cam laterally with the one gripping jaw to commence the jaw closing movement, and move the actuator along said axis so as to move the cam relative to the one gripping jaw subsequently.

4,485,697

KELLY SPINNER

Joe K. Heilhecker, Houston; James D. Rodgers, Cypress, and Steven C. Gaare, Humble, all of Tex., assignors to Foster Cathead Company, Wichita Falls, Tex.

Filed Apr. 29, 1983, Ser. No. 490,064
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.2 **6 Claims**



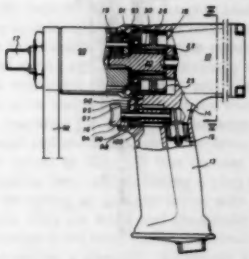
1. A kelly spinner comprising:
a housing;
an annular final drive gear having annular rack means in said housing;
means for rotating said final drive gear in opposite directions;
a pipe engaging assembly rotatable relative to said final drive gear;
said assembly including a plurality of circumferentially arranged jaws having pipe engaging faces mounted for rotation between a first position in which said faces define a relatively large circle and a second position in which said faces define a relatively small circle;
said jaws each having teeth meshing with teeth on said rack means;
friction means between said assembly and housing resisting rotation of said assembly in said housing;
stop means movable between a blocking position permitting limited rotation of said jaws from said second position and blocking rotation of said jaws to said first position during rotation of said final drive gear in one direction and a release position permitting said jaws to rotate to said second position upon said rotation of said final drive gear in said one direction; and
means for selectively moving said stop means between said blocking and release positions.

4,485,698

TORQUE DELIVERING TOOL WITH TORQUE REACTION SUPPORT

Nils G. Adman, Huddinge, and Rolf A. Jacobsson, Johannesbov, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Nov. 18, 1982, Ser. No. 442,740
Claims priority, application Sweden, Nov. 23, 1981, 8106936
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.11 **8 Claims**



1. In a power wrench comprising a pneumatic torque delivering power unit (11,12) disposed in a first housing section (10); a reduction gearing (19) and an output spindle (17) supported in a second housing section (90); a swivel connection (91) interconnecting said first and second housing sections (10,90); a pressure air supply means including a throttle valve (15,16) located in said first housing section (10); a torque reaction support means (92) rigidly attached to said second housing section (90); and a plurality of notches (93) distributed along the periphery of said second housing section (90) and a lock means (196-199) carried by said first housing section (10) and engageable with said notches (93) for transferring reaction torque between said housing sections (10,90);
the improvement wherein:
said lock means (196-199) comprises a movable detent means (196,197) and a selectively activatable bias means (198,199) urging said detent means (196,197) toward said notches (93);
said selectively activatable bias means (198,199) comprising a piston (199) and a pressure chamber (201); and
said pressure chamber (201) communicating with said pressure air supply means downstream of said throttle valve (15,16) and being partly defined by said piston (199) of said selectively activatable bias means.

4,485,699

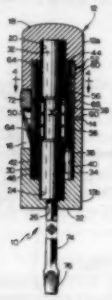
ROTATABLE HAND TOOL WITH DIRECTIONAL DRIVE CONTROL

Kevin S. Fuller, 3418 N. Greenbrier, Vadnais Heights, Minn. 55110

Filed Aug. 12, 1982, Ser. No. 407,554
Int. Cl.³ B25B *15/04*; F16D *15/00, 41/04*
U.S. Cl. 81—59.1 **9 Claims**

1. A rotatable hand tool with directional drive control comprising a handle having a longitudinal bore therein, first and second oppositely acting one-way clutch units contained in said handle bore, a drive shaft extending completely through said bore and having its ends received in portions of said handle adjacent the ends of said bore, said drive shaft providing

cylindrical surface means and having a portion of lesser cross-section than said first and second cylindrical portions, said clutch units being shiftable in an axial direction within said bore to effect alignment and a clutching action of said first clutch unit with said cylindrical surface means and non-alignment and disengagement of said second clutch unit or alignment and a clutching action of said second clutch unit with said cylindrical surface means and non-alignment and disengagement of said first clutch unit to cause said handle to rotate said shaft in one rotative direction when said first clutch unit is in alignment with said cylindrical surface means and to cause said handle to rotate said second clutch unit in an opposite rotative direction when said second clutch unit is in alignment with said cylindrical surface means at least of said clutch units when disengaged being in alignment with the portion of lesser cross-



section, said handle having a longitudinal slot extending inwardly from the outer surface of said handle into said bore, manually actuatable shifting means slideable in said longitudinal slot and extending outwardly therethrough from said bore for shifting said first and second clutch units in said axial direction within said bore to effect alignment of said first clutch unit with said cylindrical surface means when said shifting means is moved toward one end of said slot and to effect alignment of said second clutch unit with said cylindrical surface means when said shifting means is moved toward the other end of said slot, and a tool member coupled to said drive shaft, whereby said tool member is rotated in said one direction or said opposite direction depending upon whether said first clutch unit is in alignment with said cylindrical surface means or said second clutch unit is in alignment with said cylindrical surface means.

4,485,700

REVERSIBLE RATCHET WRENCH

David S. Colvin, 23933 Haynes, Farmington Hills, Mich. 48018

Filed Jan. 26, 1983, Ser. No. 461,242
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—62 **17 Claims**

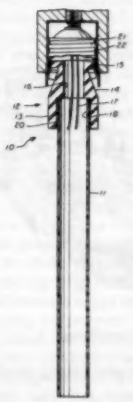
1. A reversible ratchet wrench comprising; a wrench body including a unitary head and a handle extending from the head; said unitary head having oppositely facing planar surfaces and an opening extending therebetween; said oppositely facing planar surfaces defining the maximum thickness of the wrench head of the body; the opening having circular driver and pawl portions that overlap each other; a driver having a round ratchet portion received within the circular driver portion of the head opening and supported for rotation about a driving axis; said ratchet portion of the driver having teeth that extend continuously without interruption between the oppositely facing planar surfaces of the head; the driver also including a driving portion; a generally round pawl received within the pawl portion of the opening and supported for rotation about a pawl axis; said pawl having oppositely facing planar surfaces and also having spaced teeth for selectively engaging the teeth of the ratchet portion of the driver to prevent rotation thereof with respect to the head in one direction or the other depending upon the pawl position; said pawl teeth extending continuously without interruption between the oppositely facing planar surfaces of the head to provide continuous uninterrupted engagement thereof with the teeth on the ratchet portion of the driver; the pawl having a tab for providing rotation thereof to change the direction of locking the driver against rotation; the driver including a flange having a planar surface that engages one planar surface of the head and directly engages one planar surface of the pawl; a retainer on the driver; said retainer having a planar surface for engaging the other planar surface of the head and for directly engaging the other planar surface of the pawl such that the driver flange and the retainer cooperate to retain both the driver and the pawl on the head within the opening; and means for maintaining the pawl teeth in engagement with the ratchet teeth on the driver to prevent rotation thereof in one direction or the other while permitting rotation of the driver in the opposite direction by ratcheting of the pawl.

4,485,701

TOOL FOR REMOVING BASES OF BROKEN LIGHT BULBS

Gregory L. Hough, 6102 Maywood Forest, Houston, Tex. 77088

Filed Jan. 5, 1983, Ser. No. 455,850
Int. Cl.³ B25B *13/52*
U.S. Cl. 81—64 **3 Claims**



1. A tool for removing bases of broken light bulbs from electrical sockets comprising;

a hollow tubular handle member of an electric insulating material, and

a hollow, deformable light bulb removal member of an electric insulating material securely affixed to one end thereof,

said light bulb removal member being of soft flexible elastomeric material having a hollow cylindrical shank portion fitting over an end of said hollow handle member,

a tapered portion extending therefrom,

enlarged end portion surrounding the end of said tapered portion of a size larger than the base of a normal size light bulb and adapted to be compressibly or flexibly deformed to fit tightly inside the base of a broken light bulb and

having a central opening open to the bore of said handle for encompassing filaments or filament tubes of a broken light bulb for removing said broken bulb from an electric socket.

4,485,702

POSITIVE ACTION BASIN WRENCH

William C. Swan, 5940 Lindley Ave., Encino, Calif. 91316, and Howard Kastan, 3085 Twin Oaks Rd., Cameron Park, Calif. 95682, assignors to William C. Swan, Encino; Howard Kastan, Cameron Park; Richard Magee, Sherman Oaks and Frank L. Zugelter, North Hollywood, all of, Calif., a part interest

Continuation of Ser. No. 240,013, Mar. 3, 1981, abandoned. This application Jun. 20, 1983, Ser. No. 504,856

Int. Cl.³ B25B *13/28*

U.S. Cl. 81—98 16 Claims

1. In a wrench of a class of wrenches having a pair of jaws in opposing relationship to each other, with both jaws being securely mounted at a head end for a shaft of the wrench and having a movable jaw pivotally mounted on a post rotatable in a frame member securely mounted at such head end for cooperation with a corresponding one of the pair of fixed jaws upon a work element, the improvement comprising:

a torsion bar spring having opposing ends and being disposed in a hollowness provided in the shaft,

a first rotatable drive means operatively connected to one end of said bar spring and being mounted within, and independently rotatable from, the hollow shaft,

a second rotatable drive means operatively connected to and at the other end of said bar spring and being mounted within, and independently rotatable from, the hollow shaft,

means operatively connecting said first drive means in the hollow shaft to said post on the frame member, and

means for rotating said second drive means extending across and projecting from the hollow shaft adjacent to the latter's non-head end,

the hollow shaft including opposing aligned slots in which said rotating means is disposed and across which said rotating means moves before it engages the ends of said slots to rotate said shaft.

4,485,703

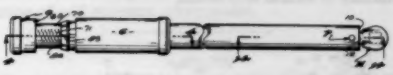
TORQUE WRENCH

Bosko Grabovac, Arcadia, and Ivan Vuceta, Walnut, both of Calif., assignors to Consolidated Devices, Inc., City of Industry, Calif.

Filed May 20, 1983, Ser. No. 497,060

Int. Cl.³ B23B *23/14*

U.S. Cl. 81—483 16 Claims



1. A torque wrench comprising an elongate, straight tubular lever with open front and rear ends, a work-engaging head at the front end of the lever and having a lever arm projecting into and pivotally connected with the front end portion of the lever, an elongate crank normally concentric with and projecting freely rearwardly into the lever, an elongate axially biased compression spring with front and rear ends extending longitudinally in the lever rearward of the crank, cam means between the front end of the spring and the crank normally releasably holding the crank concentric in the lever and operating to allow the crank to pivot and strike a side of the lever when a predetermined set operating force is exerted between the head and the lever through and about the axis of the lever arm; and manually operable means to vary the bias on said spring to adjust the set operating force and including a plug set in the lever rearward of the spring, an elongate screw with front and rear ends concentric with the lever and threadedly engaged through the plug, means at the front end of the screw engaging the rear end of the spring, a manually engageable knob drivingly coupled to the rear end portion of the screw and spaced rearward from the lever, said knob has an elongate sleeve projecting forwardly therefrom and slidably engaged about the rear end portion of the lever and has an enlarged rear end portion with a forwardly opening annular recess at and about the rear end of the sleeve, said sleeve is provided with a longitudinal calibration and a series of longitudinally spaced circumferential calibrations, an elongate tubular hand grip with a front portion slidably engaged about the rear portion of the lever and a rear portion slidably engaged about the sleeve and normally entered into said annular recess, said rear end of the grip defines a rearwardly disposed annular reference edge to cooperate with said series of calibrations when the grip is shifted axially forward to a predetermined actuated position, the rear end of the grip has a plurality of circumferentially spaced calibrations shiftable into and out of register with said longitudinal calibrations when the grip is in its actuated position, stop means stopping rotation of the grip relative to the lever and stopping axial forward movement of the grip relative to the lever at said predetermined actuated position, and indexing means releasably locking the knob in set rotative position relative to the grip when the grip is in its normal position.

4,485,704

INSTRUMENT ATTACHMENTS FOR RADIUS WORKING MACHINES

Charles C. Gardner, Los Angeles, Calif., assignor to Lawrence H. Higa and Charles C. Gardner, both of Los Angeles, Calif., a part interest

Filed Mar. 12, 1982, Ser. No. 357,402

Int. Cl.³ B23B *25/06*; B23Q *17/00*

U.S. Cl. 82—34 A 18 Claims

1. An instrument attachment for establishing outer and inner diameters of a workpiece mounted on the center line of a machine tool having a first, radially fixed member and a second, radially movable member that mounts a cutting tool for contacting said workpiece, comprising:

a first bar mounted upon said radially fixed member;

a second bar mounted upon said radially movable member;

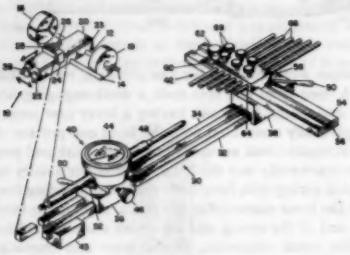
first and second block means slidably mounted upon said first and second bars;

clamping means mounted upon said first and second block means for clamping each of said block means to said first bar and, alternately, to said second bar;

first stop means;

means mounting said first stop means upon said first block means;

a plurality of second stop means;



means mounting said second stop means upon said second block means, wherein said second block means and its plurality of stop means is clamped to said first bar mounted upon said radially fixed member to establish the outside diameter of said workpiece, and said second block means and its plurality of stop means is, alternately, clamped to said second bar mounted upon said radially movable member to establish the inside diameter of said workpiece.

4,485,705

APPARATUS FOR CUTTING LUMBER

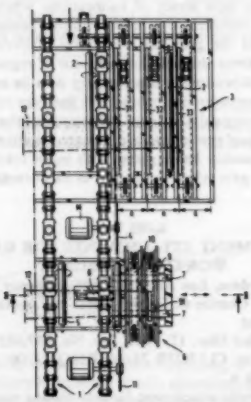
Urpo Moilanen, Heinola, Finland, assignor to A. Ahlström Osakeyhtiö, Finland

Filed May 14, 1982, Ser. No. 378,288

Claims priority, application Finland, May 15, 1981, 811498

Int. Cl.[3] **B26D** *3/00, 5/00, 7/06*

U.S. Cl. 83—39 **3 Claims**



1. An apparatus for cutting lumber by a desired length comprising:

a conveyor (1) for moving a piece of lumber on a first feed path transversely to the length of the piece of lumber;

first shifting means (5) in said first feed path for shifting the piece of lumber in a second feed path extending longitudinally of the length of the piece of lumber;

guide (7);

a carriage (6) movable on said guide in said second feed path;

drive means (8) connected to said carriage for moving said carriage to any position in said second feed path on said carriage;

two first counter-check means (9,10) connected to said carriage (6) each having a first stop (91) movable into said second feed path to stop motion of the piece of lumber on said second feed path, said first stops being spaced along said second feed path by a fraction of a modular length;

cutting means (11) positioned downstream of said carriage (6) with respect to said first feed path positioned to cut a desired length from the piece of lumber on said first feed path which desired length is set by a position of said carriage (6) on said guide (7) by said drive means (8);

second shifting means (2) positioned upstream of said carriage (6) with respect to said first feed path for moving the piece of lumber in a third feed path which is parallel to and in the same direction as said second feed path;

a plurality of second counter-check means (3) spaced along said third feed path each having a second stop (31,32,33) movable into said third feed path for stopping movement of the piece of lumber on said third feed path, said second stops being spaced along said third feed path by said modular length; and

additional cutting means (4) positioned downstream of said second counter-check means and upstream of said carriage (6) with respect to said first feed path for cutting a length from the piece of lumber moving along said first feed path which is defined by one of said second stops of said second counter-check means which is in said third feed path;

each of said first counter-check means and each of said second counter-check means comprising a counter-check chain having said respective first and second stops connected thereto, each counter-check chain movable parallel to and at the same rate as said conveyor for moving each stop against which the piece of lumber engages at the same rate as the piece of lumber in said first feed path.

4,485,706

METHODS AND APPARATUS FOR CUTTING A SUBSTRATE

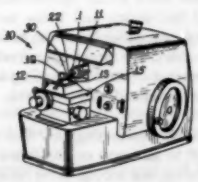
Dale R. Disharoon, 2480 Newcastle Ave., Cardiff, Calif. 92007

Continuation-in-part of Ser. No. 201,131, Oct. 27, 1980, Pat. No. 4,317,401, which is a division of Ser. No. 56,469, Jul. 11, 1979, Pat. No. 4,269,092. This application Mar. 1, 1982, Ser. No. 353,019

The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.

Int. Cl.[3] **G01N** *1/06*

U.S. Cl. 83—42 **10 Claims**



1. A method for smoothly cutting a substrate comprising the steps of providing a substrate to be cut, providing a knife element comprising a vitreous carbon body having two intersecting smooth surfaces which intersect along a substantially smooth intersection edge, and pressing said vitreous carbon

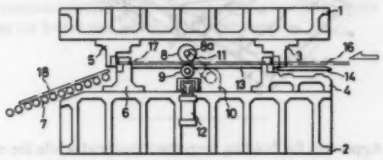
knife element intersection edge against said substrate to cleanly slice said substrate.

4,485,707

METHOD OF CONVEYING SHEETS, AND BLANKING DIE ASSEMBLY IN A PINCH PRESS

Eiji Tsuge, and Takeshi Chujo, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 28, 1982, Ser. No. 454,095
Claims priority, application Japan, Sep. 4, 1981, 56-131717
Int. Cl.³ B26D 7/18
U.S. Cl. 83—82 4 Claims



1. A blanking die assembly in a punch press, having an upper die base and a lower die base;

upstream cutter units and downstream cutter units supported by said die bases for cutting a sheet material simultaneously along two lines spaced apart from each other in the direction of feed of the sheet material;

means for conveying downstream an upstream blanked sheet piece from between said upstream and downstream cutter units and out of said press,

said conveyor means including motor-driven upper rolls disposed between said upstream and downstream cutter units and supported by said lower die base,

lower rolls vertically movably mounted to said lower die base in confronting relation to said upper rolls; and

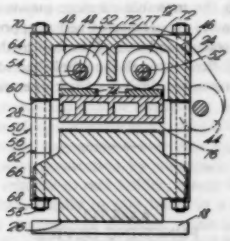
control means for controlling the position of said lower rolls so that said upstream blanked sheet piece is sandwiched between said upper and lower rolls to be conveyed downstream after the striking stroke of said press.

4,485,708

PUNCHING DEVICES

Albert Halff, An der Maar 5, 4053 Jüchen 6, and Manfred Vossen, Op dem Felde 28, 4055 Niederkrüchten 1, both of Fed. Rep. of Germany

Filed Nov. 18, 1981, Ser. No. 322,541
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044083
Int. Cl.³ B26F 1/40; B26D 7/06
U.S. Cl. 83—277 9 Claims



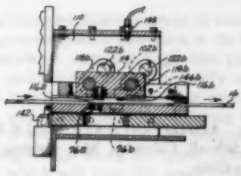
1. A punching device for automatic punching machine for the punching of sheet material comprising: impulsion means for a top shoe; a bottom shoe and a top shoe, wherein one shoe supports punch knives and the other shoe supports a counterpunch, one shoe is stationary and the other shoe is movable to and fro normal to the plane of the counter punch by said impulse means; and a gripper bar arrangement for intermittent forwarding between said top and bottom shoes of sheets for punching, wherein the bottom shoe is stationary and the top shoe is moved, and the impulsion means for the top shoe comprise eccentric drive means located between the top shoe and a yoke which is connected with the stationary bottom shoe through prestressed tie rods and said eccentric drive means is adapted to provide a gripper movement period of up to 288° of rotation of said eccentric drive means.

4,485,709

APPARATUS FOR PUNCHING HOLES IN A MOVING STRIP

Doyle W. Huber, Kent; Richard H. Smith, and Robert L. Strong, both of Auburn, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 251,689, Apr. 6, 1981, abandoned, which is a division of Ser. No. 34,808, Mar. 30, 1979, Pat. No. 4,277,868.
This application May 20, 1982, Ser. No. 380,205
Int. Cl.³ B23D 25/06
U.S. Cl. 83—324 2 Claims



1. An apparatus for punching holes in a moving metal strip comprising: a housing, a slide block having a female die, an incline plane surface located on the slide block to provide a stop surface, a punch block having a male die, a four bar linkage to extend between the housing and the punch block to allow rotation of the punch block and the linkages located in starting position to contact the stop surface means for advancing the slide block with stop surface in syncronism with the travel of a metal strip to be punched, pneumatic means for continually seeking to rotate the punch block, means for providing auxiliary power for driving the punch block during actual punching, means for moving the slide block back to starting position, and means for timing rotation of the punch block for permitting the slide block to be in starting position before the punch block returns.

4,485,710

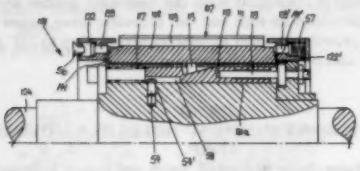
APPARATUS FOR SEVERING RUNNING WEBS OF TIPPING PAPER OR THE LIKE

Siegfried Schlisio, Geesthacht, and Karl-Heinz Schlüter, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Jun. 4, 1982, Ser. No. 385,257
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1981, 3122310
Int. Cl.³ B23D 25/00, 19/06
U.S. Cl. 83—346 19 Claims

1. Apparatus for repeatedly severing a running web, particularly a web of tipping paper in a filter tipping machine, comprising an anvil rotatable about a first axis and having a hard cylindrical peripheral surface a portion of which is contacted by the running web; a carrier rotatable about a second axis which is at least substantially coplanar with said first axis; at least one knife movably mounted in said carrier and disposed in a plane extending substantially radially of said second axis, said knife having an elongated cutting edge arranged to cooperate with said portion of said peripheral surface to sever the web

once during each revolution of said carrier and said knife being tiltable with reference to said carrier about a third axis which is substantially normal to and spaced apart from said second axis; and means for yieldably biasing said knife in a direction which is substantially parallel to said second axis so as to hold



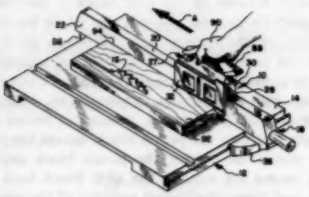
said cutting edge in an orientation and at a distance from said second axis as determined by said portion of the peripheral surface of said anvil in response to first engagement between such cutting edge and said portion of said peripheral surface, said biasing means comprising a portion movable in said direction.

4,485,711

ADJUSTABLE STRADDLE BLOCK

John W. Schnell, Columbia, Mo., assignor to Shopsmith, Inc., Dayton, Ohio

Filed Sep. 2, 1982, Ser. No. 414,146
Int. Cl.³ B26D *7/06*
U.S. Cl. 83—425 **3 Claims**



1. For use with a saw table having a rip fence mounted thereto, a straddle block comprising:

a body having a substantially vertical fixed leg, an adjustable leg parallel to said fixed leg, and a bridge attached to said fixed leg and extending to said adjustable leg;

said vertically adjustable leg having upper and lower surfaces including substantially horizontal rectilinear opposing edges, and opposing step portions extending outwardly from said rectilinear edges, said step portions each including a contact edge suitable for engaging a trailing end of a piece of stock, and said adjustable leg having a centrally located vertically extending slot;

said body including guide means positioned symmetrically with respect to said slot for preventing skewing of said adjustable leg relative to said bridge;

adjusting bolt means having a shank extending through said body, a head slidably engaging said slot and means for selectively tightening said shank to clamp said adjustable leg to said bridge and loosening said shank to permit adjustment of said adjustable leg relative to said bridge, including adjustment of said block to reverse hand by rotating said adjustable leg 180° in a vertical plane; and

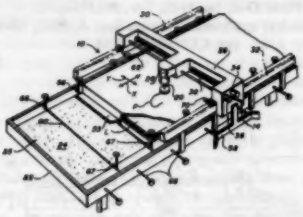
handle means extending upwardly from said body and offset away from said adjustable leg.

4,485,712

METHOD AND APPARATUS FOR HOLDING SHEET MATERIAL IN A SECTIONED VACUUM BED

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Dec. 28, 1981, Ser. No. 334,477
Int. Cl.³ B26D *7/02*
U.S. Cl. 83—451 **19 Claims**



1. Apparatus for holding limp sheet material while the material is worked with a tool, the material and the tool being mounted for movement in controlled relationship relative to one another comprising:

support means having an air-permeable bed defining a support surface on which limp sheet material is spread in a work operation;

movable carriage means connected with the tool and the support means to permit the tool and the sheet material to move relative to one another parallel to the support surface in a work operation, whereby the tool may operate on the material at different work stations;

vacuum generating means connected with the air-permeable bed for drawing a vacuum at the support surface through the bed to hold limp sheet material on the support surface firmly in position while the material is worked upon by the tool;

a plurality of air-impermeable partitions mounted at spaced intervals and in generally perpendicular relationship with the support surface for individual movement into and out of the air-permeable bed in a direction perpendicular to the support surface whereby the bed and the support surface can be divided into a plurality of contiguous sections separated by the air-impermeable partitions and thereby render the bed capable of drawing a vacuum in the overlying material without air flow between contiguous sections; and

actuating means connected with the plurality of partitions for moving the partitions individually and independently into and out of the air-impermeable bed in the perpendicular direction, the actuating means being operatively associated with the movable carriage means to position the partitions in the air-permeable bed at opposite sides of the tool work station and out of the bed at the work station whereby air flow through the whole bed toward the work station is prevented during a work operation.

4,485,713

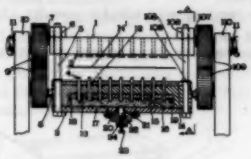
PUNCHING DEVICE

Angelo Dotta, Via Altabella 10, Bologna, Italy

Filed Oct. 20, 1982, Ser. No. 435,388
Claims priority, application Italy, Oct. 20, 1981, 3555 A/81
Int. Cl.³ B26F *1/06*
U.S. Cl. 83—543 **3 Claims**

1. A punching device for band material comprising at least

one die containing a plurality of tools supported by stems slidably mounted in ducts provided in a base portion of said die



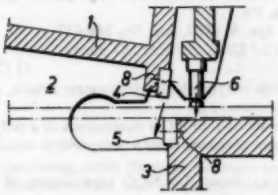
and communicating with a closed chamber filled with fluid acting on lower end portions of said stems.

4,485,714

ARRANGEMENT FOR ATTACHING A KNIFE BLADE IN A POWER SHEARS

Egon A. L. Eriksson, Skelleftea , Sweden, assignor to Ursvikens Mekaniska Verkstads Aktiebolag, Ursviken, Sweden

Filed Oct. 26, 1981, Ser. No. 315,017
Claims priority, application Sweden, Oct. 28, 1980, 8007571
Int. Cl.³ B23D *35/00*
U.S. Cl. 83—698 **13 Claims**



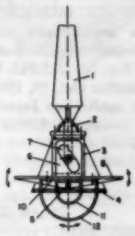
1. Means for securing an elongate prismatic object such as the knife blade of a power shears or the like to a holder having first and second elongate engagement surfaces at right angles to one another and engaging respectively first and second engagement surfaces of the object, said holder having a plurality of bores extending in from said first engagement surface at least approximately perpendicular thereto, said bores being spaced from one another longitudinally of said first engagement surfaces, said securing means comprising a plurality of gripping members slidable axially respectively in said bores, means for connecting said gripping members to said object comprising a tongue-and-groove connection with an undercut groove extending longitudinally in one of said first engagement surfaces to permit engagement and disengagement of said tongue-and-groove connection by movement of said object longitudinally relative to said holder, means for moving said gripping members axially in said bores in a direction away from said first engagement surfaces, when said tongue-and-groove connection is engaged, to press said first engagement surface of said object tightly against said first engagement surface of said holder and thereby secure said object to said holder, and means for moving said gripping members axially in said bores in a direction toward said first engagement surfaces to release said object so that said object can be removed from said holder by moving it longitudinally relative to the holder.

4,485,715

METHOD FOR MANUFACTURING INSULATING TROUGHS FOR PIPES, AND AN APPARATUS FOR CARRYING OUT THE METHOD

Teuvo T. Hytti, Lappeenranta, Finland, assignor to OY Partek AB, Parainen, Finland

Filed Feb. 17, 1981, Ser. No. 234,685
Claims priority, application Finland, Feb. 19, 1980, 800489
Int. Cl.³ B26B *7/00*; B26D *3/06*
U.S. Cl. 83—875 **4 Claims**



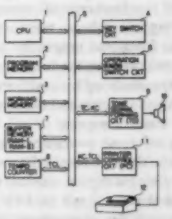
1. A method for cutting insulation material to form an insulating trough having an irregularly bent form in the longitudinal direction for receiving a correspondingly bent pipe, which method comprises oscillating a pair of generally concentric cutting band blades rotatibly about a common axis in a common cutting plane; and advancing said oscillating blades by hand along a path in accordance with said irregularly bent form of the insulating trough along the upper surface of the insulation material, which will form the upper surface of the trough, the larger radius blade cutting said insulation material along said path thereby forming the outer surface of said insulating trough, and the smaller radius blade cutting said insulation material along said path thereby forming the inner surface of said trough corresponding to the dimensions of said pipe.

4,485,716

METHOD OF PROCESSING PERFORMANCE DATA

Tatsuhiro Koike, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 27, 1983, Ser. No. 498,780
Claims priority, application Japan, Jun. 2, 1982, 57-94363
Int. Cl.³ G10F *1/00*
U.S. Cl. 84—1.03 **5 Claims**



1. A method of processing performance data, comprising:

forming performance data comprising note event data indicative of a start timing of respective notes and rests, and note pitch data indicative of pitches of said notes or indicative of said rests by absense of a note pitch therein, said note event data and said note pitch data constituting a music progression;

forming barline data comprising barline event data indicative of barline timings for drawing respective barlines which appear at a predetermined time interval defining a measure for the music progression, and note pitch data indicative of pitches of the notes or indicative of the rests at respective barline timings;

judging whether or not said note pitch data of said barline data indicates a note pitch, and whether or not difference in time length between said barline timing and said start timing of a note or rest of said performance data which is present immediately before or after said barline timing is smaller than a predetermined length of time; and

adjusting, based on a result of said judgment, said start timing of a note or rest with respect to the barline timing.

4,485,717

ELECTRONIC MUSICAL INSTRUMENT

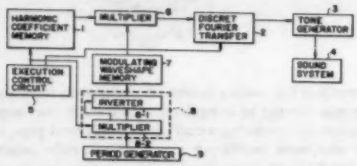
Hiroshi Kitagawa, Iwata, Japan, assignor to Kabushiki Kaisha Kawai Gakki Sesiukusho, Hamamatsu, Japan

Continuation of Ser. No. 315,983, Oct. 28, 1981, abandoned. This application Oct. 19, 1983, Ser. No. 543,316

Claims priority, application Japan, Oct. 28, 1980, 55-151124

Int. Cl.³ G10H *1/043*

U.S. Cl. 84—1.22 **3 Claims**



1. An electronic musical instrument for producing a musical sound by controlling harmonic coefficients of harmonics in the sound and using, computing means based on dicrete Fourier transfer, comprising:

a harmonic coefficient memory for storing a set of harmonic coefficients each specifying the relative amplitude of a respective one of a set of sinusoidal harmonic components of the sound;

discrete Fourier transfer means for computing musical waveshape data by multiplying harmonic coefficients read out from said harmonic coefficient memory and a sinusoid value related to the degree of each of the harmonic efficients;

means for generating, for a first harmonic forming a fundamental wave for the sound and having a period, a period function indicated by the predetermined period data and for generating, for further harmonics of the sound, period functions of a period which is directly proportional to the period of the fundamental wave;

a modulating waveshape memory read out by the period functions from said means for generating;

means for multiplying modulating data from the modulating waveshape memory by said harmonic coefficients and for providing the multiplied data an an input to said discrete Fourier transfer means;

a plurality of tone generators supplied with the musical waveshape data from said discrete Fourier transfer means, for generating a digital musical waveshape by reading out the musical waveshape data by a desired note clock; and

acoustic means for converting the digitial musical waveshape from said plurality of tone generators into an analog musical waveshape for producing a musical tone.

4,485,718

RAPID DE-ICING SYSTEM

Walery Furmanski, and Herman Schmid, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Oct. 20, 1982, Ser. No. 435,513

Claims priority, application Sweden, Oct. 22, 1981, 81062341

Int. Cl.³ F42B *1/00*; F42D *3/00*

U.S. Cl. 89—1.14 **15 Claims**

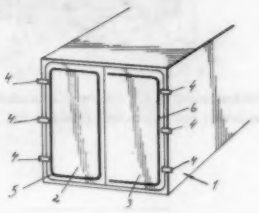
1. An apparatus for rapidly de-icing a surface comprising:

an elongated groove in said surface open in the direction of ice to be removed from said surface;

a tubular charge of powder positioned in said groove with the axis of said tubular charge parallel to the axis of said groove; and,

means for igniting said tubular powder charge internally along its length;

said tubular powder charge upon ignition burning from the



inside outwards at a rate proportional to the thickness of a layer of ice over said open groove, and said burning rate being sufficiently high to flake said layer of ice loose from said surface and sufficiently low in the absence of said layer of ice that the burning of said charge has no explosive effect.

4,485,719

RESILIENT HIGH MODULUS POLYURETHANE ELASTOMER

Morris A. Mendelsohn, Wilkins Township, Allegheny County; Francis W. Navish, Jr., East Pittsburgh, and George E. Rudd, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 8, 1982, Ser. No. 366,457

Int. Cl.³ C08G *18/83*; F16J *15/32*

U.S. Cl. 89—1.816 **11 Claims**

1. A high modulus polyurethane elastomeric article, comprising the cured admixture of:

(A) about 0.97 to about 1.10 NCO equivalents of a polyurethane prepolymer prepared from a composition consisting essentially of:

(1) about 3.1 to about 3.4 NCO equivalents of 4,4'-diphenylmethane diisocyanate,

(2) about 0.35 to about 0.45 OH equivalents of a low molecular weight triol selected from the group consisting of trimethylol ethane, trimethylol propane, trimethylol butane, trimethylol pentane and mixtures thereof, and

(3) about 1.0 OH equivalent of polyoxytetramethylene glycol, with

(B) 1.0 OH equivalent of hydroquinone di-(β-hydroxyethyl) ether; said elastomeric article characterized as being resilient, strong and crack resistant, and having a high rigidity.

4,485,720

PARALLEL RAIL ELECTROMAGNETIC LAUNCHER WITH MULTIPLE CURRENT PATH ARMATURE

George A. Kemeny, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 24, 1982, Ser. No. 381,603

Int. Cl.³ F41F *1/02*

U.S. Cl. 89—8 **47 Claims**

1. An electromagnetic projectile launcher comprising:

a first conductor;

a second conductor disposed generally parallel to said first conductor;

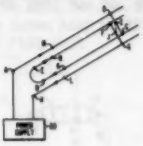
a first plasma for propelling a projectile from a first end of said first and second conductors to a second end thereof and for conducting current therebetween;

a third conductor disposed generally parallel to and adjacent said first conductor and being electrically connected to said second conductor adjacent said first end thereof;

a fourth conductor disposed generally parallel to and adjacent said second conductor;

a second plasma for propelling said projectile from a first end of said third and fourth conductors to a second end thereof and for conducting current therebetween;

a source of high current electrically connected to said first end of said first conductor and to said first end of said fourth conductor; and



an insulating sabot disposed between said first and second conductors and said third and fourth conductors, said insulating sabot being shaped to prevent coalescence of said first and second plasmas.

4,485,721

RIFLED FIBER REINFORCED GUN BARREL

Vikram S. Shankhla, Val St-Michel, and Raymond Langlois, Loretteville, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Apr. 6, 1981, Ser. No. 255,118

Claims priority, application Canada, Apr. 10, 1980, 349507

Int. Cl.³ F41F *17/04, 17/08*

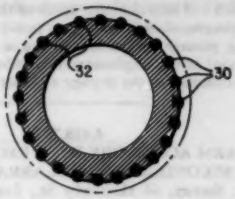
U.S. Cl. 89—15 **1 Claim**

1. A tubular barrel element for repeated use in a reloadable recoilless gun, wherein the barrel element comprises:

an unlined non-metallic tubular body made wholly of a composite material in which reinforcing fibers of carbon are embedded in a matrix of an epoxy resin;

said tubular body including riflings interiorly thereof operable during launch of a projectile from said gun to impose predetermined spin on the projectile each of said riflings including an enlarged base portion provided during fabrication to form an expanded area extending into the remainder of said tubular body and through which shear loads generated in the riflings durin firing of the projectile are transmitted into the remainder of the tubular body; and

the carbon fibers beind disposed generally longitudinally along the riflings and circumferentially in the remainder of the body, with said tubular body being built up in thickness to provide stength properties in predetermined



directions to withstand firings of said projectile under pressure and velocity conditions which confer sufficient kinetic energy to said projectile to reach its target.

4,485,722

RECOIL BRAKE WITH HYDROPNEUMATIC RECUPERATOR AND FORWARD MOVEMENT DAMPING

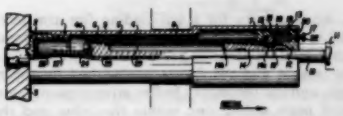
Josef Metz, Neuss, and Gert Winkler, Meerbusch, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Apr. 20, 1981, Ser. No. 259,191

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1980, 3015097

Int. Cl.³ F41F *19/14*

U.S. Cl. 89—43 R **9 Claims**



1. An improved recoil brake for a gun barrel having a hydropneumatic recuperator and forward movement damping, including a recoil cylinder which is slidably mounted in a storage cylinder for pressurized gas, a separating piston slidable in the storage cylinder and rigidly secured to the recoil cylinder, said separating piston separating the storage cylinder into variable pressurized gas and pressurized liquid chambers, a guide bushing being axially mounted in the recoil cylinder, a piston rod axially slidably mounted in said guide bushing and having at one of its ends a piston axially rigidly secured thereto which piston is slidably disposed in the recoil cylinder, the gun barrel being secured to the other end of said piston rod, first passage means for the pressurized liquid being provided between the inner space of the recoil cylinder and the inner space of the storage cylinder in its rear end region that is behind the separating piston and in front of its rear end wall, and second passage means being provided for the pressurized gas between the pressurized gas chamber disposed behind a guide ring means in the storage cylinder in which the recoil cylinder is operatively mounted and the inner space of the storage cylinder disposed in front of the guide ring means:

the improvement, comprising in combination,

(a) wherein said guide bushing is constructed and arranged in such a way that first passage means cause the pressurized liquid to be firstly, until shortly after exiting of the projectile from the gun barrel, slightly, or not at all throttled during recoil, whereby only a reduced or no braking force is being applied to the gun barrel, whereafter said first passage means are increasingly reduced in size to thereby exert an increased braking force on the recoiling gun barrel; and

(b) in the front region of the storage cylinder between inter-

nal wall of the storage cylinder and internal surface of the guide ring means for the recoil cylinder, which functions as a brake cylinder, a displacement cylinder is slidably guided in such a way that it is adapted to penetrate with its closed end into the inner space of the recoil cylinder, said displacement cylinder being provided with third throttling passage means to provide a passage between the interior of the displacement cylinder and the pressurized gas chamber in the storage cylinder.

4,485,723

FIRE ARM ACCESSORY WITH RECOIL ABSORBING SECONDARY BUFFER ARRANGEMENT

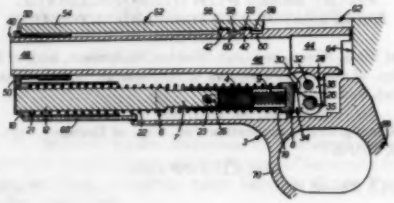
Peter P. Saroay, 44 Harrowby St., London, England (W1H 5HX)

Filed Jan. 12, 1982, Ser. No. 338,962

Claims priority, application United Kingdom, Jan. 14, 1981, 8101112

Int. Cl.³ F41D *11/12*

U.S. Cl. 89—163 **20 Claims**



1. An accessory for a self-loading fire arm having a main recoil spring, said accessory comprising: a secondary buffer arrangement for absorbing forces in the fire arm resulting from firing a shot and the forces unabsorbed by the main recoil spring, and the secondary buffer arrangement having first and second parts sliding one within the other and the first and second parts are of a size extending firstly along substantially the entire length of the central bore defined by the main recoil spring and secondly the first and second parts extend across substantially the entire width of the central bore of the main recoil spring, a secondary buffer spring positioned inside the second part and the secondary buffer spring positioned inside the main recoil spring, and a plug member, the first part having a cylindrical portion slidable in the second part against the pressure of the secondary buffer spring, the first part having a flat sided portion, the first part having a collar portion separating the cylindrical portion and the flat sided portion, the collar portion being too large to slide inside the second part so that the collar portion is effective to limit the length of travel of the cylindrical portion into the second part, the plug member defining a slot, the flat sided portion projecting through the slot, and the plug member acting on the main recoil spring during use of the accessory whereby the main recoil spring is guided and supported along substantially its entire length as it is compressed and expanded over the first and second parts of the accessory during use of the accessory.

4,485,724

HYDRAULIC CONTROL APPARATUS

Bayramadi Demircan, Bergkamen, and Willy Kussel, Werne, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

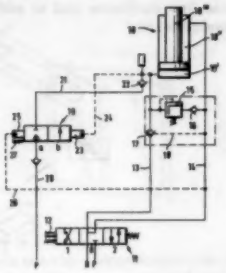
Filed Jun. 25, 1982, Ser. No. 392,352

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1981, 3128279

Int. Cl.³ F15B *9/08*

U.S. Cl. 91—29 **14 Claims**

1. In hydraulic control apparatus for operating support props of a mineral mining installation; said apparatus comprising pressure fluid feed and return lines, at least one manually-operable control valve device for selectively connecting said feed and return lines to respective working chambers of a support prop and automatic setting means for automatically connecting one working chamber of the prop which is charged with pressure fluid to effect extension of the prop to a source of pressure fluid when a predetermined threshold pressure in



said one chamber is exceeded, said threshold pressure being lower than a desired setting pressure and higher than that which prevails in said one chamber while the prop is being extended; the improvement comprising fluid actuated means responsive to the fluid pressure in said feed line for automatically disabling the automatic setting means when the control valve device connects the other working chamber of the prop to said feed line to effect prop retraction.

4,485,725

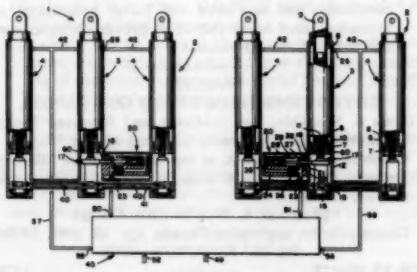
ACTUATOR SYSTEM INCLUDING HYDRAULICALLY SYNCHRONIZED ACTUATORS

James N. Tootle, Kalamazoo, Mich., assignor to Pneumo Corporation, Boston, Mass.

Filed May 13, 1982, Ser. No. 377,984

Int. Cl.³ F15B *15/26, 11/22*

U.S. Cl. 91—45 **12 Claims**



1. An actuator system comprising two sets of actuators, each set including a plurality of actuators, each said actuator including a cylinder and a reciprocable piston capable of fluid pressure actuation in either direction, means for mechanically synchronizing all of said actuators of each set both in position and motion, and a pair of parallel connected flow regulator means connected to the extend ends of one of said actuators of each set, said flow regulator means including means for limiting the flow of fluid to and from said extend ends of said one of said actuators of each set through said flow regulator means to synchronize the rate at which said one of said actuators of each set extend and retract, and means providing fluid communication between the extend ends of all of said actuators of

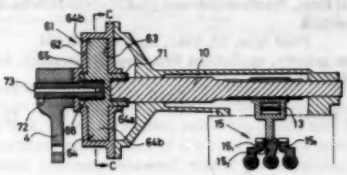
each set whereby all of the flow to and from said extend ends of said actuators in each set is controlled by the same flow regulator means.

4,485,726

ASSISTOR FOR TRANSMISSION

Yoshio Inoue, Ranzan, Japan, assignor to Jidosha Kiki Co., Ltd., Japan

Continuation of Ser. No. 141,212, Apr. 17, 1980, abandoned. This application May 18, 1982, Ser. No. 379,321
Claims priority, application Japan, May 10, 1979, 54-57437
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—375 R **1 Claim**



1. An assistor for a power assisted shifting of a vehicle transmission using a manually movable gear shift lever (5) comprising:

a housing (62) having a central axis;

a shift rod (10) rotatably mounted about said axis in said housing having an actuator (13) for moving one shift element (15) of a plurality of elements (15_1,15_2,15_3), with rotation of said shift rod to shift the transmission;

a selection lever (6) engaged with said actuator (13) and connected by linkages to said gear shift lever (5), said selection lever pivotally mounted to said housing and movable by movement of said gear shift lever to move said actuator (13) to one of said shift elements;

a power cylinder (63) connected to said housing having an arcuate wall portion (66) and a straight wall portion (67) defining a space with an arcuate surface having a center of curvature at said axis;

a piston (64) having a boss (64*b*) rotatably mounted in said cylinder about said axis and connected to said rod, said piston having at least one vane (64*b*) extending radially into said space and toward said arcuate surface to divide said space into two pressure chambers (69, 70);

a directional valve for receiving a pressure fluid and having a rotatable stem (65) for supplying the pressure fluid selectively to one or the other of said two pressure chambers with rotation of said stem, said stem being rotatably mounted in said piston boss and about said axis;

means connecting said stem (65) to the gear shift lever (5) for moving said stem to selectively supply pressure fluid to one of said two pressure chambers to rotate said piston and connected shift rod, said means comprising a shift lever (4) fixed to said stem (65) and a linkage connected between said shift lever and the gear shift lever; and

relative rotation limiting means connected between said stem and said piston boss fcr permitting limited relative rotation between said stem and said piston boss before co-rotation of said piston boss and said shift lever, said limited relative rotation being sufficient to rotate said stem into a position for supplying the pressure fluid to one of the pressure chambers, said rotation limiting means comprising a slot in said piston boss and a projection extending from said stem into said slot having a width less than that of said slot;

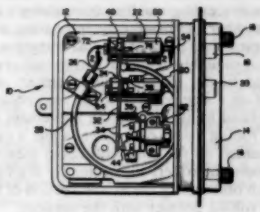
a pressure fluid passage being defined in said straight wall portion, said piston boss defining a central chamber for rotatably receiving said stem, said boss having a passage communicating said straight wall portion passage with said central chamber at all angular positions of said piston, said boss including ports communicating said central chamber with each of said two pressure chambers, said stem including passages defined on an outer surface thereof for selectively opening one of said ports at a time with relative rotation between said stem and said piston boss, to communicate said straight wall portion passage with one of said two pressure chambers.

4,485,727

PRESSURE PILOT SWITCH POINT DEVICE

David W. Shollenbarger, Marshalltown, Iowa, assignor to Fisher Controls International, Inc., Marshalltown, Iowa

Filed Jan. 19, 1983, Ser. No. 459,173
Int. Cl.³ F15B *15/24*
U.S. Cl. 92—13.2 **7 Claims**



1. In a fluid pressure sensor for monitoring a process pressure, including a Bourdon tube having an input end coupled to the process pressure and a moving output end responding to the process pressure to move in a first direction upon sensing an increasing pressure and in a second direction upon sensing a decreasing pressure, and switch point setting means for adjustably setting a pressure set point and adapted for engagement by the Bourdon tube moving output end when the pressure set point is reached, improved switch point setting means for maintaining a reliable pressure set point, said switch point setting means comprising:

a cylindrical housing;

an elongated threaded shaft rotatably mounted in said housing;

a movable post member including a base portion sized to substantially conform to the inner surface of said housing, said base portion threadably mounted on said elongated threaded shaft for longitudinal movement along said shaft during rotation thereof during setting of said pressure set point, and a post portion extending from the base portion and projecting from the housing for engagement by the Bourdon tube moving output end;

spring means within the housing for biasingly urging the base portion in positive threadable engagement with said shaft; and

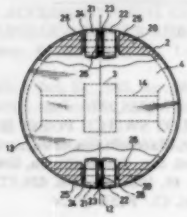
resilient means captured between said base portion and said housing inner surface for movement with said base portion;

said resilient means in resilient engaging contact with said housing inner surface to prevent undesired movement of said base portion with respect to said housing while enabling the base portion to be threadably moved by rotating said threaded shaft during setting of the desired pressure set point to overcome said resilient engaging contact of said resilient means with said housing inner surface.

4,485,728
RECIPROCATING MACHINE

Shigeru Bando, Tokushima, Japan, assignor to Bando Kiko Co., Ltd., Tokushima, Japan

Filed Oct. 6, 1982, Ser. No. 433,145
Claims priority, application Japan, Oct. 12, 1981, 56-163197; Nov. 21, 1981, 56-187174; Dec. 19, 1981, 56-205679; May 12, 1982, 57-69860
Int. Cl.³ F16J 1/02; F16C 29/04
U.S. Cl. 92—178 22 Claims

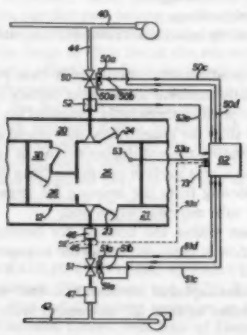


1. A reciprocating machine comprising a support, a reciprocating member performing reciprocating motion in the support, a crank shaft performing rotary motion, a connecting rod connected rotatably at its one end to said crank shaft and at its other end to the reciprocating member, and rolling means mounted on a side portion of the reciprocating member on a plane defined by the oscillating movement of the connecting rod, the rolling means comprising a pin, a pair of rollers rotatably mounted on the pin, and biasing means mounted on the pin between the rollers for resiliently urging the rollers away from each other along the axial direction of the pin, the rollers being in rolling contact with the support.

4,485,729
CONTROL OF THE ATMOSPHERE IN AN ENCLOSURE

Mark D. Crittenden, Geelong; Graeme J. Lowe, Sunshine, and Neil S. McLaren, Highton, all of Australia, assignors to Commonwealth of Australia, Melbourne, Australia

Continuation of Ser. No. 280,014, Jun. 18, 1981, abandoned. This application Feb. 2, 1984, Ser. No. 576,159
Claims priority, application Australia, Nov. 9, 1979, PE1279
Int. Cl.³ F24F 11/04
U.S. Cl. 98—1.5 13 Claims



1. A method of controlling an atmosphere in an enclosure to which gas is being supplied, comprising:

monitoring two parameters, being atmospheric pressure within the enclosure and the rate of gas flow to or from the enclosure and conveying monitored values obtained thereby to a control means;

comparing at the control means the monitored values of these parameters with respective adjustable set points to obtain pressure and rate of flow error values;

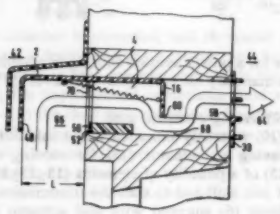
determining respective adjustments of gas inflow and exhaust valves for the enclosure, each in dependence upon both of said error values, if necessary,

effecting said adjustments of the valves to said adjustable set points.

4,485,730
VENTILATION UNIT

Heinz G. Baus, Wartbodenstrasse 35, CH-3626 Hünibach-Thun, Switzerland

Filed Mar. 22, 1982, Ser. No. 360,654
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112310
Int. Cl.³ F24F 13/18
U.S. Cl. 98—118 12 Claims



1. Air-ventilation unit for mounting in an opening across a frame between one side of the frame and the other to control air flow therebetween, said unit defining a flow duct and comprising:

an air control slide movable back and forth at least partly in the flow duct and having a central horizontal guiding top part and at least two parallel legs including first and second legs at the ends thereof extending downwardly into and across the flow duct;

stationary guide means for guiding the movement of the slide; and

closure surface means at the lower ends of the legs and on the guide means and arranged for cooperating together in one position of the slide to close off the flow duct;

at least the second leg extending down into a portion only of the flow duct such that when the slide is moved away from said one position, air flows through the flow duct;

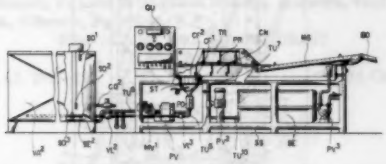
the stationary guide means comprising two guide elements each on one side of the flow duct and each having a step-like formation defining a high horizontal surface and a low horizontal surface separated by an upright stop surface, the central top part of the slide resting on and being guided by the high horizontal surfaces, an air stop wall being secured to the guide elements across the flow duct and arranged at the corresponding lower end portions of the guide elements adjacent the low horizontal surfaces thereof for stopping the second leg in abutting relation to the corresponding closure surface means of the second leg, to close the flow duct, the first leg being arranged at the corresponding side portions of the guide elements adjacent the high horizontal surfaces thereof and extending fully across the flow duct, a connecting element joining the guide elements, and the closure surface means of the first leg being arranged for abutting the connecting element in a closed position of the slide relative to the flow duct.

4,485,731

APPARATUS FOR THE CONTINUOUS MANUFACTURE OF BUTTERMILK CURD

Guido Rota, c/o Ing. Misitano A.G., Via Padova, 217 Milano, Italy

Filed Sep. 2, 1981, Ser. No. 298,759
Claims priority, application Italy, Jun. 11, 1981, 22264 A/81
Int. Cl.[3] A23C *19/024;* A01J *25/00*
U.S. Cl. 99—453 1 Claim



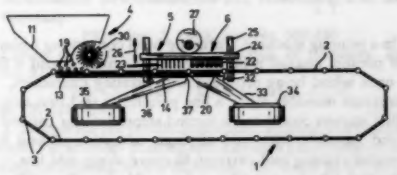
1. Apparatus for the continuous manufacture of buttermilk curd from whey comprising a tank, means for supplying whey to said tank, means for heating said whey in said tank to a first predetermined temperature of less than 80° C., a substantially horizontal treatment channel, means for supplying heated whey from said tank to said channel, said supply means including a heating chamber in proximity to said channel, means for heating whey in said heating chamber to a second predetermined temperature of above 80° C., spray nozzles operable to spray a coagulant liquid into said channel to form curd, means for sweeping said channel to carry the formed curd away from said nozzles, an endless band conveyor aligned with said sweeping means and operable to receive the swept curd and convey it to a discharge station, temperature response means in said tank operatively associated with the heating means for the whey in the tank to define said first predetermined temperature, said heating chamber being of substantially cylindrical shape and opening successively through a frusto-conical chamber and a decantation chamber to said treatment channel, said decantation chamber being defined between a first lower perforated partition confining said frusto-conical chamber and a second upper perforated partition confining said treatment channel and said nozzles opening to said channel in proximity to said second perforated partition.

4,485,732

MACHINE FOR PITTING DRUPACEOUS FRUITS

Yves Goudard, Aurec, France, assignor to Mecanique Generale J. Deville & Cie Societe Anonyme, Aurec-sur-Loire, France

Filed Apr. 29, 1983, Ser. No. 489,699
Claims priority, application France, Apr. 29, 1982, 82 07828
Int. Cl.[3] A23N *4/00, 4/08*
U.S. Cl. 99—549 12 Claims



1. A machine for the pitting of drupaceous fruits, comprising:

an intermittently movable horizontal transporter with a succession of cylindrical bores each centered on a vertical axis and provided with a flared upwardly facing mouth, said bores being provided below said mouth with a constant diameter substantially corresponding to that of a drupe to be pitted;

a loading station, a pitting station and an ejection station disposed in the path of said transporter for successive traverse by a given bore thereof, said loading station including hopper means for filling each passing bore with a drupe, said pitting station including vertically reciprocable pusher means insertable from above into bores aligned therewith for dislodging the pits of drupes contained therein, said ejection station including vertically reciprocable plunger means insertable from above into bores aligned therewith for discharging the pitted drupes therefrom;

a base underlying the bores of said transporter at said station, said base having at least one aperture with an elastic rim centered on the axis of a bore aligned therewith, said rim being dimensioned to close around a pit dislodged from the aligned bore by said pusher means for stripping adhering pulp from said pit;

first guide means disposed underneath said base for directing dislodged pits to a first destination; and

second guide means disposed underneath said transporter at said ejection station for directing discharged pitted drupes to a second destination, said transporter being an upper run of an endless chain, said base and said guide means being disposed between said upper run and a lower run of said chain, said chain comprising a multiplicity of hingedly interlinked conveyor plates each formed with a group of said bores, said pusher means comprising a number of parallel pushers equal to the number of bores in a conveyor plate, said pushers being individually aligned with the bores of a conveyor plate arrested in said pitting station, said plunger means comprising a number of parallel plungers equal to the number of bores in a conveyor plate, said plungers being individually aligned with the bores of a conveyor plate arrested in said ejection station, said pushers and said plungers being provided with a common reciprocable carrier overhanging a pair of adjoining conveyor plates of said upper run in said pitting and ejection stations, said carrier being provided downstream of said ejection station with a set of wipers insertable into the bores of an aligned conveyor plate for cleaning the peripheral walls thereof.

4,485,733

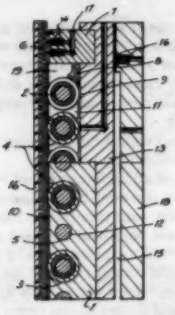
ARRANGEMENT FOR THE SUPPORT OF PRESS BANDS AT ROLLER BODY SUPPORTED DOUBLE BAND PRESSES

Kurt Held, Alte Strasse 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 466,885
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1982, 3207156
Int. Cl.[3] B30B *5/06*
U.S. Cl. 100—93 RP 3 Claims

1. An arrangement for the support of press bands on roller body supported double band presses for exercising a surface pressure comprising a press band having a front side to contact the material being pressed and an opposite rear side, a roller bed for supporting the rear side of said press band, seals positioned between said roller bed and the rear side of said press band, a heating plate is disposed in said roller bed and in spaced generally parallel relation with said press band, elongated support-bearing bars are supported on said heating plate and extend from said heating plate to adjacent the rear side of said press band, said support-bearing bars having bores therethrough extending transversely of the elongated direction thereof, shafts extending through said bores across said roller bed, needle rollers mounted on said shafts and extending through said bores, said needle rollers being arranged in rows on said shafts and being offset in the transverse direction, said rollers on adjacent said shafts being in spaced relation and forming hollow spaces therebetween and between said heating

plate and the rear side of said press band, filling elements positioned within and filling out said hollow spaces, said rollers and said heating plate disposed in closely spaced relation forming a rolling gap therebetween, said rollers and said filling elements disposed in closely space relation forming a capillary gap therebetween, said rollers and the rear side of said press band disposed in closely spaced relation forming a support bearing gap therebetween, said rolling gaps, capillary gaps and support bearing gaps are limited to a minimum specified by the manufacturing tolerances of the parts forming the gaps, a lubricant filling said rolling gaps, capillary gaps and support



bearing gaps, wherein the improvement comprises that an equalizing space is located between the rear side of said press band and within said roller bed and is arranged to be acted upon with fluid pressure medium, a cover located on the opposite side of said heating plate from said press band, and said cover and heating plate defining a pressure chamber therebetween, seals for sealing said pressure chamber, said equalizing space is completely enclosed by said roller bed which in addition serves for supporting said press band, said equalizing space being limited on opposite sides by said press band and said heating plate.

4,485,734

FOUR COLUMN POSITIONING MECHANISM FOR CALENDER MACHINES

Paul J. Klemmer, and Michael J. Daul, both of Appleton, Wis., assignors to Appleton Machine Company, Appleton, Wis.

Filed Mar. 24, 1983, Ser. No. 478,442
Int. Cl.³ B30B *3/04*
U.S. Cl. 100—168 **10 Claims**

1. A mechanism for vertically positioning a stack of calender rolls relative to a four column support frame, each roll being mounted to the frame for movement in the vertical direction comprising:

(a) means for lifting and lowering the top roll of said stack,

(b) means for lifting and lowering the bottom roll of said stack,

(c) means for interconnecting the remaining rolls of said stack, one to the other and to said top roll for movement with the latter, said interconnecting means including:

(i) piston and cylinder assemblies associated with each of said remaining rolls interconnected one to the other and to said top roll,

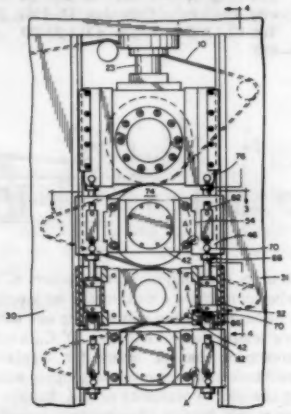
(ii) lost motion connecting means for interconnecting each piston and cylinder assembly to one of said remaining rolls, said connecting means including:

(a) means for supporting said rolls,

(b) plate assemblies movable on said frame receiving and engaging said supporting means and dimensioned to permit a small vertical movement of said support means relative thereto,

(d) means for controlling operation of said assemblies to permit or prevent movement of the pistons relative to the cylinders,

whereby when the pistons are permitted to move the remaining rolls may be sequentially lowered and automatically positioned in contact with each other and said top and bottom rolls, and when the pistons are prevented from moving, the rolls may be rapidly separated, one from the other, by a distance determined by the lost motion connecting means simply by lowering said bottom roll.

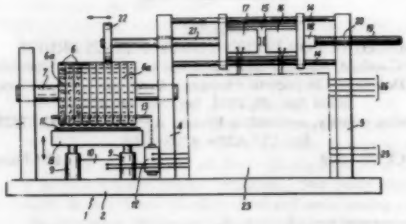


4,485,735

AUTOMATIZED PRINTING MACHINE AND PRINTING UNIT FOR SUCH A MACHINE

Henri V. J. Jonca, Toulouse, France, assignor to Societa Nationale Industrielle et Aerospatiale, France

Filed Mar. 22, 1983, Ser. No. 477,629
Claims priority, application France, Mar. 25, 1982, 82 05103
Int. Cl.³ B41J *1/22*
U.S. Cl. 101—93.21 **4 Claims**



1. In a printing machine, a printing head comprising a plurality of parallel coaxial printing wheels rotatable about a first axis, each wheel being provided with printing characters,

a carriage movable along a line parallel to said first axis,

a first stepper motor and a second stepper motor carried by and movable with said carriage, actuation of said first motor causing said carriage to move along said line,

a control wheel carried by and movable together with said carriage, said control wheel being driven by said second stepper motor for rotation about a second axis parallel to said first axis, said control wheel being adapted to engage directly any selected one of said printing wheels on actuation of said first motor and to bring a desired printing character on said selected wheel into printing position on actuation of said second motor;

said first and said second stepper motors being independently operable.

4,485,736

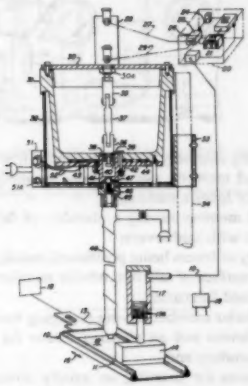
INK-DISPENSING SYSTEM AND METHOD FOR SILK-SCREEN PRINTING HAVING SQUEEGEE STROKE MOVEMENT COUNTER

Carl Strutz, Jr.; Frank C. Strutz, both of R.D. 2, Camp Trees Rd., Mars, Pa. 16046; Rome R. Rudolph, deceased, late of Gibsonia, Pa., and by Kathleen Rudolph, executrix, 4113 Lee Rd., Gibsonia, Pa. 15044

Filed Aug. 26, 1983, Ser. No. 526,637

Int. Cl.³ B41M *1/12*

U.S. Cl. 101—129 **14 Claims**



1. A method to dispense ink for printing with a silk screen, said method including the steps of:

filling an ink-dispensing measuring chamber with a predetermined quantity of ink,

counting the strokes corresponding to relative displacement between a squeegee and said silk screen,

producing a control signal in response to a preestablished number of counted strokes by the squeegee,

operating an actuator in response to said control signal to force the quantity of ink in said measuring cylinder into a conduit, and

conducting the ink in said conduit onto a silk screen for printing.

4,485,737

DEVICE FOR INK PROFILE-DEPENDENT REGULATION DAMPENING SOLUTION

Willi Jeschke, Heidelberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

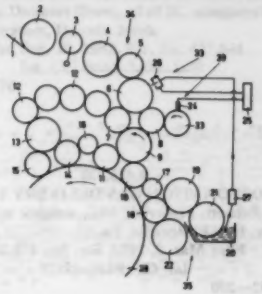
Filed Jun. 2, 1983, Ser. No. 500,316

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1982, 3220701

Int. Cl.³ B41F *7/30, 7/36*; B41L *25/06*

U.S. Cl. 101—148 **13 Claims**

1. Device for ink profile-dependent regulation of dampening solution in an offset printing unit having a plate cylinder and an inking-dampening unit which, over the width of a type form, supplies a dampening solution film of substantially uniform thickness to the plate cylinder and to the inking part of the inking-dampening unit, comprising a hydrophilic measuring roller in contact with one of a plurality of inking unit rollers; a measuring device disposed in vicinity of said measuring roller for determining extent of wetting of an outer cylindrical surface of said measuring roller section-by-section over the entire width of said measuring roller and for transmitting corresponding signals; means for varying the proportion of the dampening solution in the ink film section-by-section; and a control stage for converting the signals from said measuring device into



adjustment commands and applying them to said proportion varying means for varying section-by-section the proportion of dampening solution in the ink film.

4,485,738

METERING BLADE FOR ZONALLY METERING A LIQUID FILM

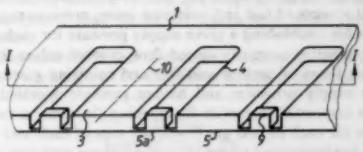
Peter Gertsch, Niederscherli; Robert Imhof, Bern, and Andreas Zahnd, Zollikofen, all of Switzerland, assignors to Maschinenfabrik WIFAG, Switzerland

Filed Dec. 3, 1982, Ser. No. 446,698

Claims priority, application Sweden, Dec. 14, 1981, 810747/67

Int. Cl.³ B41F *31/04*

U.S. Cl. 101—365 **2 Claims**



1. A metering blade for zonally metering a liquid film on a rotatiang roller in inking coating and dampening devices of printing machines which is usable with a displaceable setting member which is adapted to bear against the blade adjacent a working edge thereof to position this edge in relationship to the rotating roller, comprising a blade body (1) having the working edge (5, 5a) and an opposite holding edge and having a plurality of alternately arranged resilient setting portions (3) and intermediate portions extending along its length, said setting portions each having a thickness of at least 3 mm, said intermediate portions each including a bottom comprising a thin web (8) having a thickness at most 1/5th the thickness of said setting portions and a width in a longitudinal direction amounting to at least five times the thicknesss of said web, and a reinforcement (9) defined adjacent said working edge intermediate the width of said web, said blade being made of a single piece of metal, said blade body being in the form of a flat plate, said intermediate portions formed as elongated rectangular recesses in a surface of said flat plate adapted to face away from the rotating roller, said setting portions being rectangular in said surface and being defined between said recesses and having a width equal to the width of said reinforcement for each intermediate portion, each reinforcement comprising a rectangular raised portion on said web of each intermediate portion and having rectangular sides spaced away from a setting portion on each side and a rectangular end extending to

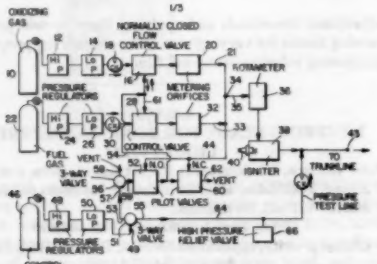
said working edge, a length of said sides of said reinforcement being less than a width of said recess between a setting portion on each side of said recess.

4,485,739

DETONATION GAS DELIVERY UNIT

George C. Emmett, Frederick, Md., assignor to H. L. & A. G. Balsinger, Inc., Bridgeville, Pa.

Filed Mar. 2, 1983, Ser. No. 471,337
Int. Cl.[3] F42C *15/28*
U.S. Cl. 102—200 9 Claims



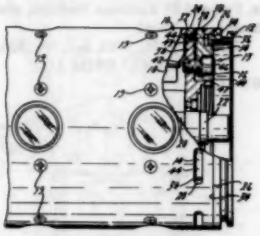
1. A delivery unit for supplying a combustible mixture of fuel and oxidizing gases in a predetermined proportion to a series of gas-detonated explosive charges via a network of tubing including a main trunk line, said unit comprising individual sources of fuel and oxidizing gases; pressure regulating means for establishing a given supply pressure for each of said gases; separate normally closed flow control valves for controlling flows of each of said fuel and oxidizing gases at said given supply pressures and having pressure-operated servo means associated therewith for opening the same; a metering orifice for each of said gas flows, the area of each said orifice being predetermined to meter the volume per unit time of such gas flow passing therethrough at said given supply pressure; at least one terminal fitting receiving a mixture of said metered gas flows and adapted to be connected to the main trunk line of said tubing network to deliver said gas mixture into said network and thence to said series of blasting charges; an ignition chamber adapted for communication with one such terminal fitting, said chamber including spark-generating means therein for igniting the gas mixture in said trunk line, whereby the resultant combustion wave propagates through the tubing network to detonate said explosive charges; and control means for said flow control valves to maintain a minimum pressure differential between the inlet and outlet pressures thereof, said control means comprising a separate source of an inert control gas for delivering a flow of control gas, and pressure regulating means therefor for establishing a given control pressure for said control gas flow, and pilot valve means effective to normally apply said control gas pressure simultaneously to the servo means for both said flow control valves to open the latter and operable in response to the occurrence of a backpressure in the flow of said gas mixture through said terminal connection exceeding a predetermined maximum to release said control gas pressure from both said flow control valve servo means to cause the flow control valves to revert to their normally closed state and interrupt said gas flows into said tubing network until said excessive backpressure is dissipated.

4,485,740

COUPLING ASSEMBLY FOR JOINING TUBULAR SECTIONS

Harold O. Boss, Corona Del Mar, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 23, 1981, Ser. No. 333,951
Int. Cl.[3] F16D *1/00*; F16B *7/10*; B65D *45/00*
U.S. Cl. 102—293 7 Claims



1. A coupling assembly for connecting a first tubular member to a second member, said coupling assembly comprising:

a plurality of lever members;

said second member having a plurality of fulcrums for engagement with said levers;

said plurality of levers being positioned radially inward from the outer surface of said first tubular member and operably abutting said fulcrums;

said first tubular member having engaging means for engaging said levers and an abutting means for abutting said second member; and

exerting means for exerting an axially directed force between each of said levers and said second member such that said levers pivot about said fulcrums and exert in turn an axially directed force onto said engaging means of said first tubular member parallel to the central axis of said first tubular member to cause said abutting means to forcibly abut said second member; wherein

said fulcrums are positioned radially between said engaging means and said exerting means, said fulcrums being closer to said engaging means than to said exerting means.

4,485,741

BOOSTER CONTAINER WITH ISOLATED AND OPEN CORD TUNNELS

Jack M. Moore, and Michael T. Sutch, both of Benson, Ariz., assignors to Apache Powder Company, Benson, Ariz.

Filed Apr. 13, 1983, Ser. No. 484,726
Int. Cl.[3] F42D *3/00*
U.S. Cl. 102—331 5 Claims

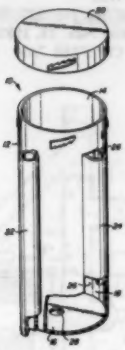
1. A container for holding packaged explosives, said container consisting essentially of:

an elongate receptacle having a continuous side wall, a closed bottom, and an open top, wherein said side wall is characterized by:

(1) an isolated cord tunnel comprising a first elongate tube attached to the outer surface of the receptacle and substantially axially aligned with the receptacle, wherein the interior of said first tube and said receptacle are physically isolated to prevent propagation of explosion by a detonator cord received therethrough; and

(2) an open cord tunnel comprising a second elongate tube open at both ends and attached to the outer surface of the receptacle and substantially axially aligned with the receptacle, wherein the interior of said second tube and the

interior of said receptacle are open to each other at substantially all points where they adjoin to allow propaga-



tion of explosion by a detonator cord received therethrough; and

a cap for closing the open top of the receptacle.

4,485,742

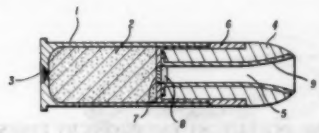
FIREARM BULLET

Anthony C. Mamo, 1515 E. Central Ave., Apt. 264B, Arlington Heights, Ill. 60004

Filed Jun. 5, 1981, Ser. No. 271,083

Int. Cl.³ F42B *5/02, 11/00*

U.S. Cl. 102—430 **12 Claims**



1. In firearm ammunition, the combination of:

a powder charge;

a cartridge case means for holding said powder charge;

a primer for igniting said powder charge;

a projectile disposed in one end of said cartridge case means and having axial vent means; and

partition means disposed to block said axial vent means and being rupturable upon ignition of said powder charge;

the amount of said powder charge being of such predetermined value as would produce a destructive chamber over-pressure for a particular firearm; and

the area of said vent means being of such predetermined size as to permit escape of a portion of the combustion pressure through said vent means and ahead of the projectile while it is still in the barrel of the particular firearm, to prevent an over-charge explosion force from reaching a value that would normally be destructive if used with an unvented projectile in the particular firearm.

4,485,743

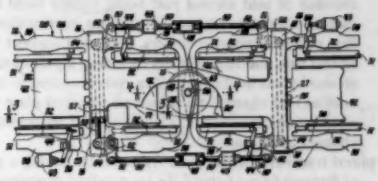
HIGH EFFICIENCY SEMI-ARTICULATED RAILWAY POWER TRUCK

Roy W. Roush, Downers Grove; Mostafa Rassaian, Chicago, and Karl R. Smith, Downers Grove, all of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 29, 1982, Ser. No. 427,641

Int. Cl.³ B61F *3/06, 5/48*

U.S. Cl. 105—176 **7 Claims**



1. In combination in a powered railway truck,

a pair of multiple axle sub-trucks having frames individually supporting and pivotable with respect to a span bolster adapted to support a rail vehicle carbody, said sub-trucks being longitudinally disposed in tandem adjacent end to end relation, said bolster and carbody together constituting supported means carried by said sub-trucks,

power means for driving the wheels of the truck,

tractive force transfer means operatively longitudinally connecting the sub-truck frames with said supported means, and

articulating means laterally positively connecting the adjacent ends of the two sub-truck frames to correlate pivotal turning movements of the sub-trucks relative to the bolster, said articulating means being operative to require substantially equal and opposite simultaneous turning movements of the sub-trucks but providing at least limited freedom of relative vertical and longitudinal movement of the adjacent ends of the sub-trucks with respect to one another,

whereby coordinated turning control with isolation of interframe rocking and traction force effects is provided.

4,485,744

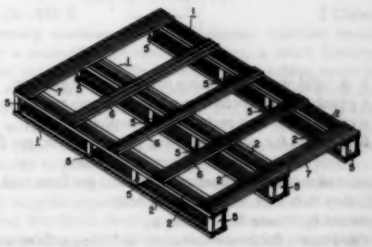
METAL PALLET

Akihiro Umemura, Nagoya; Hisayoshi Kunii; Michiyasu Shimizu, both of Sagamihara, and Yoshinari Sato, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 19, 1982, Ser. No. 399,869

Int. Cl.³ B65D *19/28*

U.S. Cl. 108—51.1 **3 Claims**



1. A metal pallet comprising:

a plurality of longitudinal frames arranged parallel to one another at predetermined separated intervals each said frame including a pair of opposing metal plate members,

each said plate member having a plurality of furrows formed along the longitudinal direction thereof and channel portions defined on each longitudinal side thereof;

first and second pairs of support members interposed between each respective pair of metal plate members to couple and separate the plate members of each pair vertically, each said support member of said first pair being rigidly fixed between said pair of plate members at respective ends of said plate members and each said support member of said second pair being rigidly fixed between said pair of plate members at locations intermediate of said first pair of support members, each said support member of said first and second pairs including a pair of separated channel posts having opposing ends accepted in opposing ones of said channel portions and a central plate member rigidly fixed between and bridging said separated pair of channel posts; and

plural transverse metal plate frames each having a plurality of furrows formed along the longitudinal direction thereof and arranged parallel to one another on the upper surfaces of said longitudinal frames at right angles thereto.

4,485,745

METHOD FOR THERMAL PROCESSING OF SOLID WASTE AND THE APPARATUS FOR CARRYING OUT THE METHOD

Gerd-Peter Bracker, and Hanns-Helmut Riemann, both of Bochum, Fed. Rep. of Germany, assignors to Mannesmann Veba Umwelttechnik GmbH, Herne, Fed. Rep. of Germany

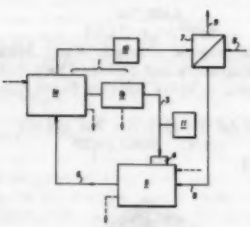
PCT No. PCT/DE82/00013, § 371 Date May 20, 1982, § 102(e) Date May 20, 1982, PCT Pub. No. WO82/02585, PCT Pub. Date Aug. 5, 1982

PCT Filed Jan. 21, 1982, Ser. No. 385,644

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 3101961

Int. Cl.³ F23G *1/00*

U.S. Cl. 110—229 **1 Claim**



1. A solid waste procesing apparatus comprising:

a pyrolysis unit including a pyrolysis gas purifying means;

a combustion unit including an auxiliary burner;

first means for communicating pure pyrolysis gas from said pyrolysis unit with said auxiliary burner;

second means for communicating flue gas from said combustion unit with said pyrolysis unit;

means for waste heat retrieval;

third means for communicating said flue gas from said pyrolysis unit with said means for waste heat retrieval; and

a pure pyrolysis gas storage container connected to said first means for communicating, whereby a sufficient volume of said pure pyrolysis gas for start up and peak gas eduction is available for use in said combustion unit.

4,485,746

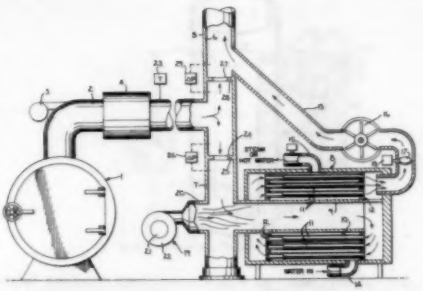
ENERGY RECOVERY SYSTEM FOR AN INCINERATOR

Kjell I. Eriandsson, Milwaukee, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 327,793, Dec. 7, 1981, abandoned. This application Nov. 18, 1983, Ser. No. 553,358

Int. Cl.³ F23B *7/00*

U.S. Cl. 110—234 **16 Claims**



1. An energy recovery system, comprising means to generate heated gas, stack means connected to the said first name means for conducting said gas to the atmosphere, auxiliary conduit means connected to said stack means, heat exchanger means disposed in said auxiliary conduit means for transferring heat from said gas to a heat transfer fluid, flow sensing means disposed in said stack means downstream of the connection of said auxiliary conduit means with said stack means for sensing the direction of gas flow in said stack means, flow inducing means for inducing a flow of gas in said conduit means in a direction from said stack means to said heat exchanger means, flow control means disposed in said conduit means for controlling the flow of gas through said conduit means, and means operably connecting said flow sensing means with said flow control means to obtain a substantially zero flow of gas in said stack means at the location of said flow sensing means to thereby insure that substantially the entire flow of said flue gas is directed through said auxiliary conduit means to said heat exchanger means.

4,485,747

REDUCING POLLUTANT EMISSIONS BY FINES REMOVAL

David W. Pershing, Salt Lake City, Utah; George B. Martin, Cary, N.C., and James M. Munro, Rapid City, S. Dak., assignors to The United States of America as represented by the Environmental Protection Agency, Washington, D.C.

Filed Jul. 15, 1983, Ser. No. 514,192

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **38 Claims**

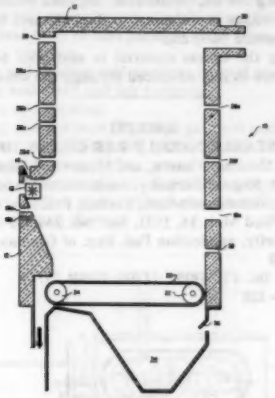
1. A method for reducing NO_x and particulate pollutant emissions from a furnace having a suspension region, the method comprising the steps of:

obtaining a combustible material of variously sized particles;

separating smaller particles of the combustible material, which would normally combust while suspended within the suspension region of the furnace, from larger particles of the combustible material, thereby minimizing the formation of NO_x and particulate emissions during combustion in the suspension region of the furnace;

introducing the larger particles of combustible material, from which smaller particles of combustible material have

been separated, into the suspension region of the furnace; and



combusting the combustible material within the furnace to produce heat.

4,485,748

SEWING MACHINE WITH A STOP FOR THE MATERIAL TO BE SEWN

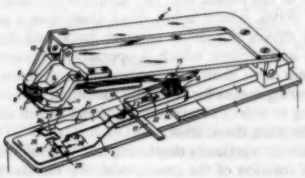
Ernst Albrecht, and Karl Barth, both of Hochspeyer, Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Mar. 14, 1983, Ser. No. 475,328

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1982, 8210077[U]

Int. Cl.³ D05B *3/14*

U.S. Cl. 112—110 **8 Claims**



1. In a sewing machine having a vertically movable presser element for retaining the material to be sewn, the improvement comprising a resilient stop against which the material is positioned which is resiliently compressible by the presser element in a vertical direction so that the presser element may move the stop downwardly until it engages and retains the material.

5. A sewing machine, comprising a sewing machine support arm, a cloth feeding plate mounted on said arm over which the material to be sewn is fed, a stop element mounted on said support arm and overlying said cloth feeding plate, said support arm having a laterally extending portion overlying said cloth feeding plate and defining a material stop against which the material to be sewn may be positioned, said stop being compressible in a direction toward said feeding plate.

4,485,749

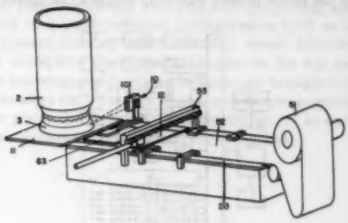
CONTROL DEVICE FOR CONTROLLING THE APPLICATION OF A GUSSET TO A TUBULAR ARTICLE

Vinicio Gazzarrini, Tavarnuzze, Italy, assignor to Solis S.r.l., Tavarnuzze, Italy

Filed Jun. 24, 1982, Ser. No. 391,701

Int. Cl.³ D05B *21/00, 3/12*

U.S. Cl. 112—121.12 **9 Claims**



1. A control device for a carrousel-type machine for applying a gusset to a pantyhose article, said carrousel-type machine having a rotatable support adapted for having a pantyhose article applied thereto, said control device comprising:

means for verifying the presence or absence of the pantyhose article on the support;

means for reading a cylindrical, uniform graduation integral with the support; and

means responsive to said verifying means and said reading means for transferring the gusset to said support only when said verifying means indicates the presence of the panty hose article on said support and to insure that said support rotates through at least 360° so that the carousel-type machine is operable only when a gusset is in place and to insure the complete serving along the entire perimeter of the gusset.

4,485,750

ELECTRONIC SEWING MACHINE

Hachiro Makabe, Fussa; Kazuo Watanabe; Hideaki Takenoya, both of Hachioji; Toshiaki Kume, Tachikawa, and Toshihide Kakimura, Tokyo, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Kyobashi, Japan

Continuation of Ser. No. 261,710, May 8, 1981, Pat. No. 4,393,795, which is a continuation of Ser. No. 96,573, Nov. 21, 1979, abandoned. This application Jul. 18, 1983, Ser. No. 515,018

Claims priority, application Japan, Mar. 15, 1978, 53-29365; Nov. 27, 1978, 53-145208; Mar. 15, 1979, 54-29799

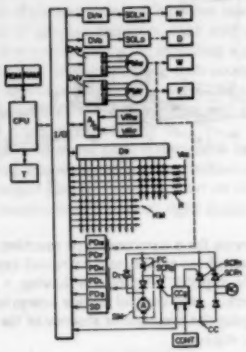
The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 E **2 Claims**

1. A sewing machine having an electric machine motor driven by a manually operated controller, a stitch forming mechanism including a needle driven by the machine motor to vertically reciprocate so as to penetrate a fabric to be sewn and a fabric feeding device driven by the machine motor in synchronism with the needle to feed the fabric relative to the movement of the needle, fabric presser means which is manually adjustable to press the fabric against the needle plate at a set pressure, and electronic memory means storing stitch data and which may be sequentially read out to control the needle position and the fabric feeding position, the sewing machine further comprising a first electromagnetic drive means operated by the stitch data of the memory means to control the needle position; a second electromagnetic drive means operated by the stitch data of the memory means to control the fabric feeding position; manually operated means for adjusting the fabric presser means to press the fabric with a suitable pressure for basting stitches and generating an electric signal at

a predetermined set position corresponding to the position it occupies; control circuit means activated by operation of the controller to drive the machine motor at a reduced speed and to stop the machine motor after one complete reciprocation of the needle with the needle stopped at the upper dead point thereof; switching means actuated by one of said electromagnetic drive means to make the fabric feeding device inoperative; and data processing means for detecting the electric signal of the fabric presser adjusting means to be thereby operated in



accordance with the corresponding programming data stored in the electric memory means, to sequentially command the first electromagnetic drive means to shift the needle to a predetermined position, the second electromagnetic drive means to actuate the switching means to make the fabric feeding device inoperative, and the control circuit means to drive when the controller is operated, the machine motor at a reduced speed and to stop the machine motor after one complete reciprocation of the needle with the needle stopped at the upper dead point thereof.

4,485,751

METHOD AND APPARATUS FOR SEAMING OPPOSED GARMENT EDGES SIMULTANEOUSLY

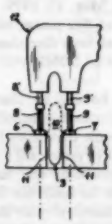
Adelio Ronchi, and Roberto Sanvito, both of Milan, Italy, assignors to Rockwell-Rimoldi S.p.A., Italy

Filed Jan. 6, 1983, Ser. No. 456,133

Claims priority, application Italy, Jan. 19, 1982, 19177 A/82

Int. Cl.³ D05B *1/08*

U.S. Cl. 112—163 **4 Claims**



1. In a sewing machine having a base and a pair of spaced needle bars and a needle mounted in each needle bar in operative association with a presser foot associated with each needle, the method of simultaneously forming seams along opposed edges of a garment workpiece having greater width than the distance between the speced needle bars which comprises the steps of:

(a) inserting the opposed edges beneath the presser foot associated with each needle;

(b) guiding the opposed edges so that they follow rectilinear paths during seaming;

(c) gathering the excess material disposed intermediate the opposed edges in a channel in the base area between the spaced needle bars; and

(d) guiding the excess material in said area between the needle bars as it is advanced through the sewing zone.

4,485,752

ADJUSTABLE NEEDLE BAR CRANK DRIVE

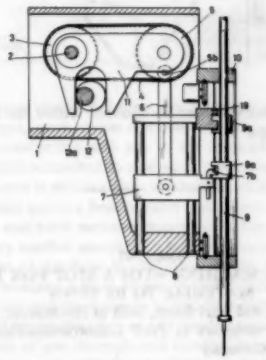
Heinz-Georg Slomma, Viersen, and Hans-Gerd Ripkens, Goch, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 244,455

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 3010840

Int. Cl.³ D05C *11/06*; D05B *55/14*

U.S. Cl. 112—221 **21 Claims**



1. In a device for driving at least one needle bar on embroidery or sewing machines having a main drive shaft which extends at a right angle to the longitudinal axis of the needle bar and substantially parallel to a front side of the machine and by which main drive shaft, by means of a drive carriage, which drive carriage is guided parallel to the longitudinal axis of a needle of the needle bar, the needle is drivable by means of a crank drive, which crank drive comprises a connecting rod which drives the drive carriage back and forth defining a stroke and a crank which is operatively rotatingly driven by the main drive shaft, the improvement comprising

a bearing means for rotatably mounting said crank and defining an axis of rotation of the crank which axis is parallel to the main drive shaft, and

means for vertically displacing said bearing means of the axis of rotation of the crank, whereby the stroke is vertically displaceable with the magnitude of the stroke remaining the same.

4,485,753

PROCESS AND APPARATUS FOR AUTOMATICALLY TRANSFERRING HOSIERY GARMENTS SUCH AS TIGHTS FROM A MACHINE

Vincente A. Silla, Castellon de la Pana, Spain, assignor to Solis S.r.l., Travarnuzze, Italy

Filed Jul. 6, 1982, Ser. No. 395,740

Claims priority, application Spain, Jul. 17, 1981, 504,416; Jul. 17, 1981, 504,417

Int. Cl.³ D05B *21/00, 97/00, 3/12*

U.S. Cl. 112—262.2 **11 Claims**

1. A process for transferring a hosiery garment formed with leg portions joined to a body portion and with a crotch opening at one end on which a patch is to be affixed, from a gar-

ment-making machine to a patch-sewing machine having tubular garment support suction means, comprising the steps of:

separating said leg portions of said garment while said garment is still on said garment-making machine;

moving said body of said garment away from said garment-making machine;

gripping and holding said garment by said opening;

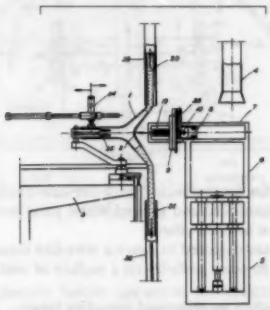
releasing said body and leg portions;

widening said opening;

removing said garment from said garment-making machine;

displacing and rotating said garment until same is aligned with said support suction means;

displacing said garment and disposing said opening on said support suction means of said patch sewing machine for sewing a patch thereon.



8. Apparatus for transferring a hosiery garment formed with leg portions joined to a body portion and with a crotch opening at one end on which a patch is to be affixed, comprising:

a hoisery garment making machine;

a patch-sewing machine having a tubular suction support for holding said hosiery garment;

means for separating said leg portions and widening said crotch opening;

means for gripping and spreading said hosiery garment at said crotch opening;

said gripping means comprising a ring member adapted to surround the mouth of said tubular suction support means of said patch-sewing machine; and

means for transferring said garment gripping and spreading means from said hosiery garment making machine to said sewing machine support means for placing the crotch opening over said support means.

4,485,754

AUTOMATIC LOADER FOR SEWING MACHINES

Kenneth A. MacDonald, Canton, Mass., assignor to Compo Industries, Inc., Waltham, Mass.

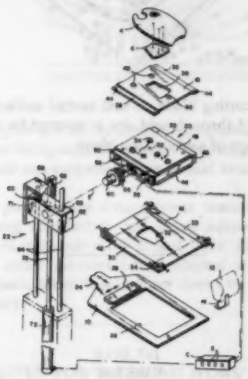
Filed Sep. 30, 1982, Ser. No. 431,761

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—262.3 **36 Claims**

1. A system for loading a workpiece onto a carriage for traverse relative to a pattern-producing instrumentality comprising a bottom plate positioned on the carriage, said base plate containing an opening, a top plate containing a corresponding opening, a picker movable relative to the carriage from a loading position remote from the carriage to a clamping position adjacent the carriage, first means on the picker for releasably holding the top plate thereon for movement therewith on the one hand to lift the top plate from the bottom plate to said loading position and on the other hand to lower the top plate to said clamping position, second means on the picker for positioning and holding the workpiece on the top plate in alignment with the opening during movement of the top plate from the loading position to and from the clamping position, said first means being operative to release the top plate at the clamping position, means on the top and bottom plates interengageable when the top and bottom plates are brought into engagement at the clamping position to align the openings therein and means at the clamping position for clamping the plates to each other with the workpiece therebetween.

25. A device for supporting and clamping a workpiece during formation of a pattern thereon by means of a pattern-forming instrumentality comprising a bottom plate containing an opening, a top plate containing a corresponding opening, said openings being of a predetermined configuration such as to receive the pattern-forming instrumentality when superimposed with a workpiece therebetween, means on the top and bottom plates interengageable when the plates are brought into engagement to align the openings therein and interengageable means on the plates for releasably locking the plates to each other with the workpiece sandwiched therebetween.



30. The method of loading a workpiece onto a supporting carriage for traverse relative to a pattern-forming instrumentality comprising with the aid of a bottom plate mounted on the carriage, a top plate for clamping the workpiece to the bottom plate and a picker to which the top plate can be alternately held and released, moving the picker and the top plate therewith relative to the carriage to engage a workpiece held to the top plate with the bottom plate for clamping thereto, releasing the top plate and workpiece from the picker, clamping the top plate to the bottom plate with the workpiece therebetween for traversing with the carriage relative to the pattern-forming instrumentality to form the pattern on the workpiece and when the pattern has been formed and the carriage returned from the pattern-forming instrumentality, engaging the top plate and workpiece with the picker, releasing the top plate from the bottom plate, returning the picker to its loading position and stripping the workpiece from the top plate.

4,485,755

THREAD CUTTER IN SEWING MACHINE FACE PLATE

Walter H. W. Marsh, Scotch Plains, and Kenneth D. Adams, Madison, both of N.J., assignors to The Singer Company, Stamford, Conn.

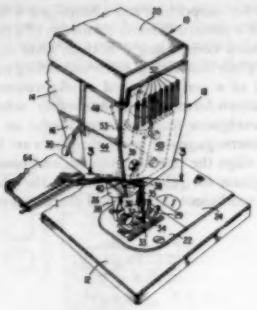
Filed Dec. 16, 1983, Ser. No. 562,317

Int. Cl.³ D05B *65/00*

U.S. Cl. 112—292 **5 Claims**

1. A sewing machine comprising a frame including a head end and a face plate covering said head end, said face plate having contiguous walls defining a hollow interior for accommodating said head end, a slot extending continuously through a portion of adjacent of said contiguous walls having a common corner from the exterior of said adjacent walls to the hollow interior of said face plate, a surface on said hollow interior on one of said adjacent walls with said slot spaced medially of said surface, said surface canted with respect to

said adjacent walls and extending from said common corner, a cutting blade on said canted surface, said cutting blade having a cutting edge extending to said common corner, and means for



retaining said cutting blade on said canted surface, whereby a thread extended through said slot is severed by impinging on said cutting edge of said cutting blade.

4,485,756

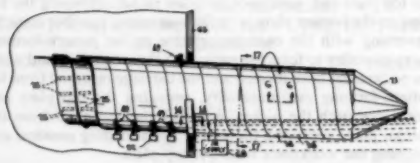
HELICAL SEAM STRUCTURAL VESSEL, METHOD AND APPARATUS OF FORMING SAME

Richard H. Smith, Sr., Elmira, N.Y., assignor to Universal Spiralweld Enterprises, Inc., Bloomfield, N.J.

Division of Ser. No. 282,082, Jul. 10, 1981, Pat. No. 4,429,654. This application May 23, 1983, Ser. No. 497,001

Int. Cl.³ B63B *9/06*

U.S. Cl. 114—65 R 4 Claims



1. A method of forming a structural vessel, comprising the steps of: floating an enclosed, water buoyant housing on a body of water and providing a sealed opening in a side wall of said housing at approximately the water level; helically winding at least one strip of material in said housing to form an elongated tubular vessel; progressively extending the wound vessel through said sealed opening while carrying out said winding step; supporting the wound vessel by floating same in the body of water; adjusting the inclination of said housing, by ballast control thereof, in relation to any inclination of the wound vessel outside said housing; and applying a downward bearing force against the vessel during said winding to compensate for any nose-down or nose-up loads created during the forming of the vessel depending on the extent thereof outwardly of said housing, and to hold down the vessel against said sealed opening should said housing and the vessel be ballasted out of synchronization.

4,485,757

PROCESS AND APPARATUS FOR APPLYING RELATIVELY HARD PARTICLES TO A CIRCULAR WIRE-LIKE FORM OR A WIRE-LIKE FORM WITHOUT LONGITUDINAL EDGES, AS WELL AS WIRE-SHAPED SAW

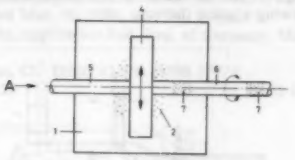
Walter Ebner, Le Locle, Switzerland, assignor to Caspar O. H. Messner, Zurich, Switzerland

Filed Nov. 24, 1982, Ser. No. 444,485

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1981, 3147287

Int. Cl.³ B05C *11/00*

U.S. Cl. 118—44 18 Claims



1. An apparatus for producing wire-like saw comprising:

at least two hardened and ground metal parts means movable relative to each other;

said parts means disposed to move a wire-like form therebetween and to press particles on a surface of said wire-like form;

means for feeding an elongated wire-like form;

means for dispensing particles on said parts means to be pressed on the surface of said wire-like form;

whereby said wire-like form is rolled about its longitudinal axis between two surfaces of said parts means to form a wire-like saw.

4,485,758

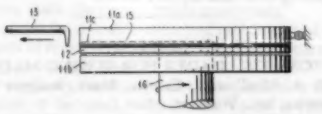
COATING THICKNESS AND WEDGE GEOMETRY CONTROL FOR MAGNETIC DISKS

Herbert V. Peugh, San Jose, and Albert W. Ward, Santa Cruz, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 317,369, Nov. 2, 1981,. This application Jun. 1, 1983, Ser. No. 500,067

Int. Cl.³ B05C *11/12*

U.S. Cl. 118—52 5 Claims



1. Apparatus for use in spin coating a liquid magnetic dispersion containing volatile solvent material onto a rotating annular substrate to form a magnetic coating on said substrate, comprising

drive means for rotating said substrate as said liquid dispersion is applied thereto, and

a substantially solid non-rotatable fluid barrier plate means positioned closely adjacent said substrate after application of said liquid dispersion thereto, said barrier plate means serving to reduce evaporation of said volatile solvent material to thereby permit said dispersion to flow more readily over said substrate to form a thinner magnetic coating;

said barrier plate means having an inner portion and an outer portion, and

said barrier plate means having a shallow recess formed in a

minor fractional portion of its surface adjacent the substrate and extending radially between said inner portion and said outer portion to permit fluid communication therebetween.

4,485,759

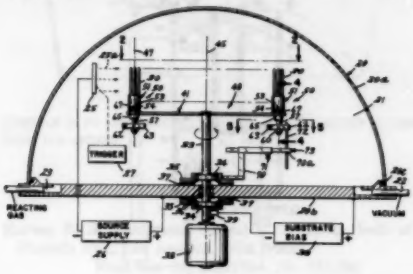
PLANETARY SUBSTRATE SUPPORT APPARATUS FOR VAPOR VACUUM DEPOSITION COATING

Henry E. Brandolf, Inver Grove Heights, Minn., assignor to Multi-Arc Vacuum Systems Inc., Saint Paul, Minn.

Filed Jan. 19, 1983, Ser. No. 458,902

Int. Cl.³ B05C *11/14*

U.S. Cl. 118—503 **37 Claims**



1. A substrate holder apparatus for rotatably supporting substrates within an evacuated physical vapor deposition chamber during coating processes, comprising:

(a) a base member configured and arranged for mounting in a physical vapor deposition chamber, said base member defining at least one work station thereon;

(b) means operatively connected with said base member for moving said base member in a manner causing said work station to traverse a closed path within said chamber;

(c) a substrate holder suitable for holding at least one substrate to be coated, rotatably mounted to said base member at said work station for rotation about an auxiliary axis, said substrate holder being normally free to move about said auxiliary axis as said substrate holder traverses said closed path; and

(d) activating means adjacent said closed path for engaging and rotating said substrate holder a predetermined number of degrees about said auxiliary axis as it passes in proximity to said activating means; whereby a substrate carried by said substrate holder is selectively rotated about said auxiliary axis as the substrate is carried along said closed path.

4,485,760

DRY PROCESS DEVELOPING METHOD AND DEVICE EMPLOYED THEREFOR

Susumu Tanaka, and Tateki Oka, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Division of Ser. No. 863,616, Dec. 23, 1977, Pat. No. 4,331,757. This application Jan. 20, 1982, Ser. No. 341,146

Claims priority, application Japan, Dec. 29, 1976, 51-158110

Int. Cl.³ G03G *15/08*

U.S. Cl. 118—657 **3 Claims**

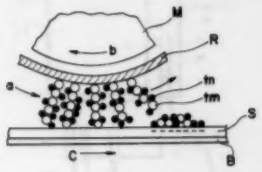
1. A dry process developing material supplying device for use in an electrophotographic developing apparatus wherein developing material including magnetizable toner and non-magnetizable toner present at a predetermined mixing ratio is consumed for developing an electrical potential pattern of predetermined polarity on a recording medium;

said dry process developing material supplying device comprising:

a housing structure and a container for accommodating therein said developing material and supplying said developing material to the electrical potential pattern by developing said electrical potential pattern into visible image;

said container comprising two compartments for respectively containing therein said magnetizable toner and said non-magnetizable toner so as to separately supply said magnetizable toner and said non-magnetizable toner via a supply port in each of said compartments,

and wherein said device is of the magnetic brush developing type, having a magnet member rotatably housed in an outer sleeve and a brush roller member rotatably disposed in a position adjacent to said outer sleeve and adapted for triboelectric contact therewith,



the supply port for the compartment containing non-magnetic toner being adjacent to and being adapted to directly supply said non-magnetic toner to said brush roller member; and

the supply port for the compartment containing magnetic toner being adjacent to and being adapted to directly supply said magnetic toner to said outer sleeve,

said brush roller member being adapted to transfer said non-magnetic toner to said outer sleeve by said triboelectric contact.

4,485,761

APPARATUS FOR TREATING WORK PIECES

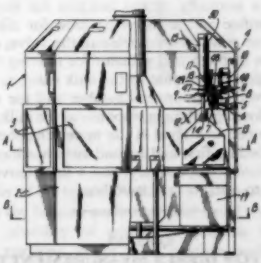
Donald G. Stewart, High Wycombe, England, assignor to Brent Chemicals International, Iver, England

Filed Feb. 25, 1982, Ser. No. 352,430

Claims priority, application United Kingdom, Feb. 28, 1981, 8106388

Int. Cl.³ B05C *3/10, 11/00*

U.S. Cl. 118—702 **9 Claims**



1. Apparatus for treating a plurality of work pieces comprising a plurality of spaced apart treatment stations arranged around a circle, an outer housing, a conveyor and a plurality of spaced apart hangers each for bolding a work piece, and a drive for moving the conveyor stepwise to move the hangers over the treatment stations, and in which the conveyor is a horizontal ring and there are a plurality of supports by which the ring conveyor is supported from the outer housing for rotation about its vertical axis, and each of the hangers is mounted on the ring and includes reciprocating means by which a work piece may be lowered into or raised from a treatment station.

4,485,762

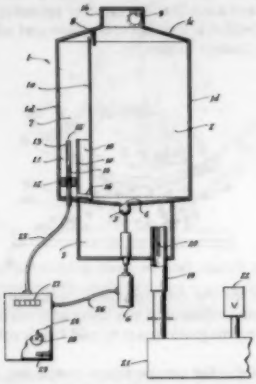
MILK METERING METHOD AN APPARATUS

Philip J. Sutton, Ebensberg, Pa.; Byron W. Lyon, Poughkeepsie, N.Y., and Gunnar A. A. Werner, Kansas City, Mo., assignors to Alfa-Laval, Inc., Poughkeepsie, N.Y.

Filed Dec. 21, 1982, Ser. No. 451,886

Int. Cl.³ A01J *9/00*

U.S. Cl. 119—14.17 **4 Claims**



1. In a milk flow meter, the combination of housing means forming a pair of closed chambers, one of said chambers being an upper metering chamber and the other being a lower mixing chamber, said upper chamber having at its upper portion an inlet for receiving milk from a milking apparatus, said chambers being interconnected through an orifice dimensioned to allow gravity flow of milk from the upper to the lower chamber at a rate greater than the maximum flow rate of milk through said inlet, means forming an air flow passage independent of said orifice and leading from the upper portion of the upper chamber into said lower chamber, said housing means also forming a float chamber adapted to receive milk from the upper chamber only through a supply passage leading from the lower portion of the upper chamber to the lower portion of the float chamber, vacuum duct means communicating with said lower chamber for withdrawing both air and milk therefrom, a valve having a normally closed position for stopping flow through the orifice and an open position for allowing flow therethrough, an actuator connected to the valve, and control means operable through said actuator for moving the valve to said open position in response to the milk rising to a predetermined high level in the upper chamber and for moving the valve to said closed position in response to the milk descending to a predetermined low level in the upper chamber, said control means including first and second switches located at said high and low level, respectively, and a float movable in said float chamber to operate said switches.

4,485,763

METHOD FOR DIRECT MEASUREMENT OF THE AMOUNT OF MILK OBTAINED FROM A COW BY A MILKING SYSTEM DURING MILKING

Friedrich Icking, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Division of Ser. No. 427,081, Sep. 29, 1982, abandoned. This application Apr. 24, 1984, Ser. No. 603,974

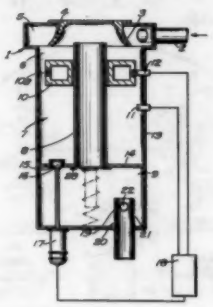
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1981, 3139536

Int. Cl.³ A01J *7/00*

U.S. Cl. 119—14.17 **3 Claims**

1. In a method for directly measuring the quantity of milk obtained from a cow being milked by a mechanical milking apparatus, including vacuum separating milk from a milk-air mixture from a cow, continuously freely feeding the separated milk to a measuring chamber, sensing the level of the milk in the measuring chamber at a first level from the bottom thereof, discharging the milk from the measuring chamber through a valved outlet by opening same when the level of the milk in the measuring chamber reaches said first level and determining the quantity (Q) of milk from partial volumes during a plurality of measurement intervals (b_i) during the flow of milk into and out of the measuring chamber, the improvement comprising:

sensing the level of the milk in the measuring chamber at a second level below said first level;



measuring the time (c_i) it takes to fill the measuring chamber from the second level to the first level;

closing the valved outlet when the milk is at the second level;

defining each measurement interval (b_i) as including at least one filling time (c_i) and one segment of the time (d_i) during which the valved outlet is open before the filling time (c_i) and after the filling time (c_i) and wherein the step of determining Q comprises calculating Q according to

$$Q = V \sum_{i=1}^{n} \frac{b_i}{c_i}$$

where

$$b_1 = c_1 + \frac{d_1}{2} \text{ and } b_i = \frac{d_{i-1}}{2} + c_i + \frac{d_i}{2} \text{ for } i = 2, 3, \ldots .$$

4,485,764

APPARATUS FOR THE CONTROLLED FEEDING OF LABORATORY TEST ANIMALS

Joachim Kieper, Maienbass 25, 2357 Bad Bramstedt, Fed. Rep. of Germany

Filed Aug. 12, 1983, Ser. No. 522,912

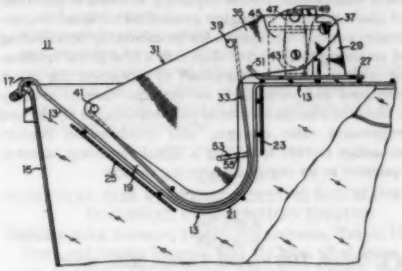
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1982, 3230155

Int. Cl.³ A01K *5/00, 1/03*

U.S. Cl. 119—18 **12 Claims**

1. An apparatus for the controlled feeding of animals in a cage having side walls comprising a cover-mounted rack adapted to be supported by said side walls, said cover-mounted rack having a horizontal portion and a well-like portion with an access port defined therein, a base member, mounted on said horizontal portion having means defining a first axis, a tiltable frame member pivotably associated with said base member for movement from a first position to a second position about said first axis, and a fodder container means operably associated with said tiltable frame member, said fodder container having means therein for the passage of fodder therethrough, such that when said tiltable frame member is in said first position, said fodder container means for the passage of fodder there-

through is in communication with said access port wherein the fodder is presented to an animal and when said tiltable frame



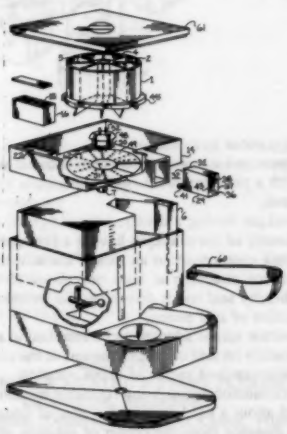
member is in said second position, fodder access is removed from the animal.

4,485,765

ANIMAL FEEDER

Harvey R. Schwartz, and Samuel I. Grossman, both of 2423 Patricia Ave., Los Angeles, Calif. 90064

Filed Sep. 23, 1982, Ser. No. 422,305
Int. Cl.³ A01K *5/02*
U.S. Cl. 119—51.13 4 Claims



1. A device for automatically dispensing pet food through a chute to a food bowl on a predetermined schedule comprising:

a housing comprising a base having a food dish compartment for holding said food bowl;

food delivery means communicating with said chute mounted on a platform above said base, said food delivery means comprising a carousel having a circular periphery, said carousel including wedge-shaped compartments having a curved outer periphery, each of the wedge-shaped compartments further comprising camming surfaces positioned along said curved outer periphery and an end stop at a forward edge of the camming surface, the bottom of each of the wedge-shaped compartments including a hinged door;

a wedge-shaped aperture in said platform; means to rotate said carousel in an advance direction;

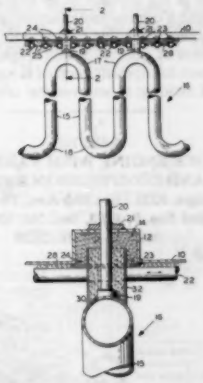
indexing means for positioning each compartment over said aperture at a predetermined time in successive order comprising a timer-actuated solenoid fixidly attached to said housing, said solenoid comprising a timer and a shaft having at one end a friction reducing wheel, said shaft having a normally extended state and an actuated withdrawn state, whereby when the carousel rotates in its advance direction, said shaft is in its extended state and said wheel rides along a said camming surface until said wheel abutts against a said stop and whereby carousel motion is halted at a position wherein a compartment is superimposed above said aperture allowing said hinged door to drop, discharging the food from the compartment through the chute to the food bowl, and upon actuation of said shaft to its withdrawn state at said predetermined time, the wheel disengages from the end stop thus allowing the carousel to rotate to the next successive compartment.

4,485,766

CONDUCTION COOLED TUBE SUPPORTS

Arthur C. Worley, Mt. Tabor, and Charles Becht, IV, Morristown, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 448,837, Dec. 10, 1982, abandoned.
This application Mar. 29, 1984, Ser. No. 594,928
Int. Cl.³ F22B *37/24*
U.S. Cl. 122—510 9 Claims



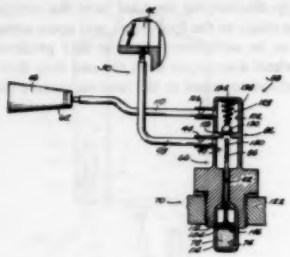
7. In a boiler of the type including a metal roof casing having insulation on the bottom surface of said metal roof casing and including a plurality of serpentine process tubes having straight run portions, upper bend portions and lower bend portions, said tubes located so that straight run portions are vertically disposed in said boiler, the improvement comprising metal sockets welded to substantially the mid portion of each upper bend portion of said serpentine tubes, metal support studs welded to said metal sockets so as to be attached to and in thermal contact with the upper bends of said process tubes, each of said support studs extending upwardly through said insulation, through said roof casing and a metal reinforcing member on the upper surface of said roof casing, each reinforcing member being welded to said roof casing, and each of said metal studs being welded to said reinforcing roof casing member, said studs being sufficiently short whereby said support studs are cooled by conduction as a result of being in thermal contact with said process tube and said roof casing.

4,485,767

ENGINE OVERHEAT WARNING SYSTEM

Gene F. Baltz, Lake Villa, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 20, 1983, Ser. No. 459,340
Int. Cl.³ F02B 77/08
U.S. Cl. 123—41.15 7 Claims



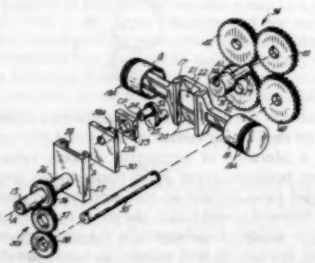
1. An engine overheat warning system for an internal combustion engine, said system including a source of gas with a presure different from atmospheric pressure, a pneumatic horn, conduit means communicable between said source and said pneumatic horn, and temperature sensing valve means for communicating said source with said pneumatic horn when the engine reaches an overheat condition so as to effect production by said pneumatic horn of an audible engine overheat warning, said temperature sensing valve means including a valve element which is located in said conduit means and which is normally closed in the absence of an overheat condition, and an expandible and a contractable temperature sensative material which is subject to engine temperature, which is independent of said source of gas, and which is operably connected to said valve element for opening thereof in response to extension of said material incident to an overheat condition.

4,485,768

SCOTCH YOKE ENGINE WITH VARIABLE STROKE AND COMPRESSION RATIO

William B. Heniges, 3325 SE. 120th Ave., Portland, Oreg. 97266

Filed Sep. 9, 1983, Ser. No. 530,485
Int. Cl.³ F02B 75/28
U.S. Cl. 123—48 B 16 Claims



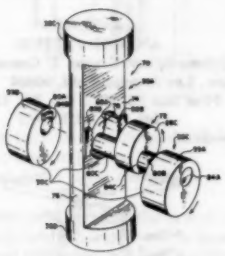
11. An internal combustion yoke type engine including,
a case having multiple cylinders,
a yoke having end mounted pistons and defining a centrally located raceway,
a slider confined within said raceway and having an oval path with straight segments and curved end segments,
an engine crankshaft including a variable length throw assembly, said slider imparting rotary motion to the throw assembly and
drive means including a control shaft, a positionable crank component including a crank boss journaled in a radially offset manner within said control shaft, said crank component further including a crankpin coupled to said slider, power transmission means imparting rotation to said control shaft opposite to engine crankshaft rotation, a compression control mechanism for momentarily accelerating and retarding said control shaft into a new phase relationship with the engine crankshaft to reposition the crank component and particularly the crankpin thereof to cause the slider to change its orbital path resulting in stroke and compression ratio changes, said compression control mechanism further including a signal receiving actuator responsive to an engine monitoring device.

4,485,769

ENGINE

Douglas T. Carson, 7220 Francis, Lincoln, Nebr. 68505

Filed Dec. 28, 1981, Ser. No. 334,963
Int. Cl.³ F02M 75/32
U.S. Cl. 123—61 R 1 Claim



1. Apparatus comprising:
a piston rod adapted to be reciprocated within an engine with a predetermined stroke length;
a crank;
a crankpin having a center;
the center of the crankpin having a predetermined radius of crank rotation about an axis of crank rotation;
means for attaching at least one piston to said piston rod, whereby said rod is driven by said piston in a direction of motion of said piston;
connector means adapted to be attached at a predetermined location on said connector means to the crankpin having a predetermined radius of crank rotation;
said connector means being rotatably mounted to said piston rod about a predetermined center of connector rotation;
with distance from the center of rotation of said connector means with respect to said piston rod and the predetermined location of connection to said crankpin being equal to said predetermined radius of crank rotation;
said piston predetermined stroke length being sustantially equal to four times the predetermined radius of crank rotation;
the connector means rotating with an angular velocity same as but in a direction opposite that of the crank rotation;
said piston predetermined stroke length having a stroke center at midstroke;
a gear interface between said crank and said piston rod, said gear interface including first and second gear portions that engage at midstroke insuring continuity of piston rod movement;
one of said gear portions being connected to said rod and the other to said crank whereby said gear portions move in a same direction at midstroke, the crank and connector means rotate in opposite directions and the piston rod moves at a velocity twice that of the center of the crankpin;

one of said gear portions being a rack mounted to said piston rod;

said crank including at least one crank journal and one crankpin;

said other of said gear portions being a pinion mounted to said crank journal;

said crank having a center of rotation;

said crankpin having a center of orbit; and

said center of connector rotation, said center of orbit of said crankpin and said center of rotation of said crank coinciding at the stroke center in which position said pinion and rack are in engagement.

4,485,770

MATERIAL FOR VALVE-ACTUATING MECHANISM OF INTERNAL COMBUSTION ENGINE

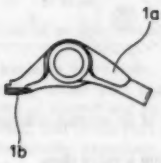
Tsutomu Saka, Saitama; Toshihiro Kamiyama, Tokyo; Hiroyuki Endo, and Yutaka Ikenoue, both of Chiba, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Hitachi Powdered Metals Company, Ltd., Chiba, both of, Japan

Filed Dec. 22, 1981, Ser. No. 333,464

Claims priority, application Japan, Dec. 24, 1980, 55-181916

Int. Cl.³ C22C *38/12, 38/14*

U.S. Cl. 123—90.39 **5 Claims**



1. A material for fabricating components of valve-actuating mechanisms of internal combustion engines, consisting of an iron-base sintered alloy consisting of by weight:

2–7% Cr (chromium);

0.1–1.5% Mo (molybdenum);

0.5–7% W (tungsten);

0.1–3% V (vanadium);

1.5–3% C (carbon);

0.1–2% P (phosphorus); and

the remainder Fe (iron).

4,485,771

ENGINE BLOCK HEATER HAVING FLEXIBLE CLAMPING MEMBER

Joseph B. Brinkhof, Oshawa, and Yih-Yi Chang, Willowdale, both of Canada, assignors to Budd Canada Inc., Kitchener, Canada

Filed Nov. 16, 1982, Ser. No. 442,007

Claims priority, application Canada, Mar. 5, 1982, 397747

Int. Cl.³ F02N *17/06;* **H05B** *3/02*

U.S. Cl. 123—142.5 E **8 Claims**

1. A heater suitable for use in an aperture of a block of an internal combustion engine, said heater comprising: a plug member having a heating element extending from one side thereof, said plug member being adapted for insertion into said aperture in sealing relation therewith such that said heating element is positioned in said block; a clamping means for securing said plug member in said aperture; and, an adjustable means passing loosely through at least one of the plug member and clamping means for adjusting the position of the clamping means relative to the plug member; and,

said clamping means comprising an elongated flexible member, having ends thereof normally biased such that the distance between said ends is greater than the diameter of said aperture, said flexible member being capable of bending in opposing directions to reduce the distance between its ends and facilitate insertion of said flexible member through said aperture, a rigid member for contacting and supporting one side of said flexible member to prevent bending of said flexible member toward said side in one of said opposing directions when said adjusting means is manipulated to draw said flexible member toward said

plug member whereby the ends of the flexible member are moved into engaging relation with interior wall portions of said block, and means for attaching the rigid member to said flexible member to allow bending in the other of said directions whereby the flexible member and rigid member can pass through the aperture in attached relation with the flexible member bending away from said rigid member.

4,485,772

AUTOMATIC ENGINE STOP-RESTART SYSTEM

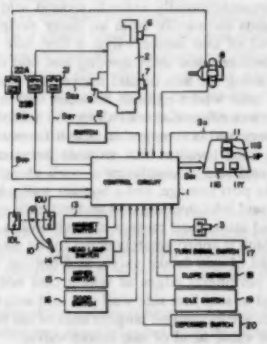
Shigekatsu Uchida, Owariasahi; Takao Akatsuka, Togocho, and Takahide Kawamura, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 16, 1982, Ser. No. 388,991

Claims priority, application Japan, Jul. 27, 1981, 56-117251

Int. Cl.³ F02D *29/02*

U.S. Cl. 123—179 B **3 Claims**



1. An automatic engine stop-restart system for automatically stopping an engine of a motor vehicle under first predetermined conditions and automatically restarting said engine under second predetermined conditions comprising:

detecting means for detecting operating conditions of various components of said vehicle;

a control circuit for judging whether or not said first and second predetermined conditions are fulfilled on the basis of detected outputs from said detecting means;

primary check indicating means having at least one indicator means connected to said detecting means for detecting an abnormal condition of at least one of said various components of said vehicle;

said control circuit including de-energizing means respon-

sive to at least one of said first and second predetermined conditions for disabling said indicator means when ever said engine is automatically stopped under said first predetermined conditions and maintaining said indicator means disabled at least until said engine has been automatically restarted.

4,485,773

HELICALLY-SHAPED INTAKE PORT OF AN INTERNAL-COMBUSTION ENGINE

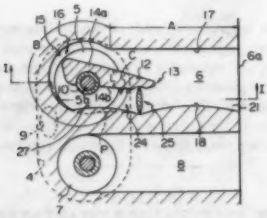
Mutsumi Kanda; Kiyoshi Nakanishi, both of Susono, and Tokuta Inoue, Mishima, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed May 18, 1983, Ser. No. 495,595

Claims priority, application Japan, Sep. 8, 1982, 57-155113; Sep. 10, 1982, 57-156839

Int. Cl.³ F02F *1/42*

U.S. Cl. 123—188 M **24 Claims**



1. An intake device of an internal-combustion engine comprising:

an intake valve having a valve stem and a valve head;

an axially extending intake port passage having an inlet opening at one end thereof and an outlet throat at the other end thereof, said intake port passage having a substantially cylindrically extending circumferential wall which circumferentially extends around said valve stem and expands outwardly from an outer periphery of the valve head of said intake valve, a first side wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage, a second side wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage and is arranged so that it faces said first side wall, an upper wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage, and a bottom wall which extends between said inlet opening and said outlet throat along the axis of said intake port passage and which has a transverse width which is approximately equal to the diameter of the valve head of said intake valve, said bottom wall having opposed peripheral edges at which said bottom wall is connected to said first side wall and said second side wall and which are located on tangent lines of the outer periphery of the valve head of said intake valve;

a separating wall projecting downwardly from said upper wall and spaced from said bottom wall, said separating wall extending along the axis of said intake port passage and being spaced from said circumferential wall so as to define a helical portion having a helix-terminating portion between said separating wall and said circumferential wall, said separating wall being spaced from said first side wall so as to define therebetween an inlet passage portion tangentially connected to said helical portion, said separating wall being spaced from said second side wall so as to define therebetween a bypass passage which interconnects said inlet passage portion and said helix-terminating portion;

normally closed valve means arranged in said bypass passage for controlling the flow area of said bypass passage; and

actuating means for actuating said valve means in response to the change in the operating condition of the engine to open said valve means when the engine is operating at a high speed under a heavy load.

4,485,774

HELICALLY-SHAPED INTAKE PORT OF AN INTERNAL-COMBUSTION ENGINE

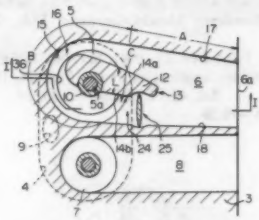
Mutsumi Kanda; Kiyoshi Nakanishi; Takeshi Okumura; Takeshi Kotani, all of Susono, and Tokuta Inoue, Mishima, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed May 11, 1983, Ser. No. 493,570

Claims priority, application Japan, May 21, 1982, 57-084934; May 21, 1982, 57-084936

Int. Cl.³ F02F *1/42*

U.S. Cl. 123—188 M **20 Claims**



1. An intake device of an internal-combustion engine comprising:

an intake valve having a valve stem;

an axially extending intake port passage having an inlet opening at one end thereof and an outlet throat at the other end thereof, said intake port passage having a substantially cylindrically extending circumferential wall which circumferentially extends about said valve stem, a first side wall which extends between said inlet opening and said circumferential wall along an axis of said intake port passage, a second side wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage and is arranged so that it faces said first side wall, an upper wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage, and a bottom wall which extends between said inlet opening and said outlet throat along the axis of said intake port passage;

a separating wall projecting downwardly from said upper wall and spaced from said bottom wall, said separating wall extending along the axis of said intake port passage and being spaced from said circumferential wall so as to define a helical portion having a helix-terminating portion between said separating wall and said circumferential wall, said separating wall being spaced from said first side wall so as to define therebetween an inlet passage portion tangentially connected to said helical portion, said separating wall being spaced from said second side wall so as to define therebetween a bypass passage which interconnects said inlet passage portion and said helix-terminating portion;

normally closed valve means arranged in said bypass passage upstream of the central position between an upstream end portion of said separating wall and an upstream end portion of said outlet throat for controlling the flow area of said bypass passage; and

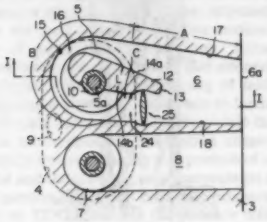
actuating means for actuating said valve means in response to the change in the operating condition of the engine to open said valve means when the engine is operating at a high speed under a heavy load.

4,485,775

HELICALLY-SHAPED INTAKE PORT OF AN INTERNAL-COMBUSTION ENGINE

Mutsumi Kanda; Kiyoshi Nakanishi; Takeshi Okumura; Takeshi Kotani, all of Susono, and Tokuta Inoue, Mishima, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed May 18, 1983, Ser. No. 495,591
Claims priority, application Japan, May 24, 1982, 57-086501
Int. Cl.³ F02F 1/42
U.S. Cl. 123—188 M 17 Claims



1. An intake device of an internal-combustion engine comprising:

an intake valve having a valve stem;

an axially extending intake port passage having an inlet opening at one end thereof and an outlet opening at the other end thereof, said intake port passage having a substantially cylindrically extending circumferential wall which circumferentially extends about said valve stem, a first side wall which extends between said inlet opening and said circumferential wall along an axis of said intake port passage, a second side wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage and is arranged so that it faces said first side wall, an upper wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage, and a bottom wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage;

a separating wall projecting downwardly from said upper wall and spaced from said bottom wall, said separating wall extending along the axis of said intake port passage and being spaced from said circumferential wall so as to define a helical portion having a helix-terminating portion between said separating wall and said circumferential wall, said separating wall being spaced from said first side wall so as to define therebetween an inlet passage portion tangentially connected to said heical portion, said separating wall being spaced from said second side wall so as to define therebetween a bypass passage which interconnects said inlet passage portion and said helix-terminating portion, said separating wall extending to near said circumferential wall and opposite said helix-terminating portion with respect to said valve stem so as to define a narrow passage portion between said circumferential wall and said separating wall, said upper wall which extends to said narrow passage portion from said inlet passage portion having a width which is gradually reduced towards said narrow passage portion;

normally closed valve means arranged in said bypass passage for controlling the flow area of said bypass passage; and

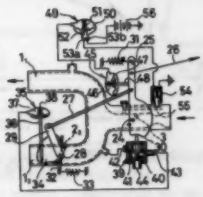
actuating means for actuating said valve means in response to the change in the operating condition of the engine to open said valve means when the engine is operating at a high speed under a heavy load.

4,485,776

CYLINDER-NUMBER-CONTROLLED ENGINE

Hiroichi Mokuya; Masao Yokko, both of Kamimura; Hiroyuki Komatsu, Hamamatsu; Katsuhisa Suzuki, Hamana, and Takeo Kitayama, Shizuoka, all of Japan, assignors to Suzuki Motor Company Limited, Japan

Division of Ser. No. 297,178, Aug. 28, 1981, Pat. No. 4,449,496.
This application May 2, 1983, Ser. No. 490,319
Claims priority, application Japan, Sep. 10, 1980, 55-125546; Dec. 2, 1980, 55-169763; Dec. 4, 1980, 55-171395; May 29, 1981, 56-82034
Int. Cl.³ F02D 17/02
U.S. Cl. 123—198 F 7 Claims



1. In an engine having a plurality of cylinders with a manifold pipe for an air fuel mixture flow to the cylinders and a plurality of intake pipe connected between the manifold pipe and each cylinder respectively, the improvement comprising:

a throttle valve movably mounted in the manifold pipe from a closed position to an open position;

a control valve movably mounted in at least one of the intake pipes from a closed position to an open position;

actuator means connected to said control valve for instantaneously opening said control valve to a selected open position, said actuator means operatively connected to said throttle valve and activatable with movement of said throttle valve from its closed position to open said control valve instantaneously to said selected open position, said selected open position being less than a fully open position of said control valve;

linkage means connected between said throttle valve and said control valve for causing movement of said control valve beyond said selected open position with movement of said throttle valve beyond a selected open position thereof;

throttle valve drive means connected to said throttle valve for moving said throttle valve from its closed position,

a throttle lever connected to said throttle valve and to said throttle valve drive means for moving said throttle valve;

switching means connected to said actuator means and engaged by said throttle lever to activate said activator means to open said control valve to its selected open position,

stopper means engaged with said throttle lever for maintaining said throttle valve in a slightly open position, one of the intake pipes having no control valve therein for passing an air fuel mixture with said throttle valved slightly open during idling of the engine, said linkage means maintaining said control valve closed during engine idling; and

a link rod connected between said throttle lever and said control valve for further moving said control valve with movement of said throttle valve beyond said selected open position of said control valve.

4,485,777

MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

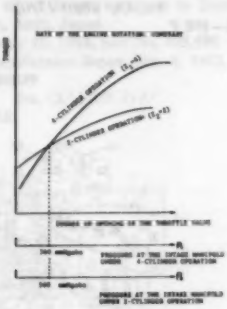
Tatsuro Nakagami, and Yoshiaki Danno, both of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 359,865, Mar. 19, 1982, abandoned. This application May 2, 1984, Ser. No. 605,987

Claims priority, application Japan, Mar. 23, 1981, 56-40448

Int. Cl.³ F02D *13/06*

U.S. Cl. 123—198 F **3 Claims**



1. A multi-cylinder internal combustion engine comprising a plurality of cylinders which are supplied with air via one common throttle valve, a cylinder number regulation unit for regulating the number of cylinders in operation which suspends operation of a part of cylinders by intercepting the air supply to said cylinders, a pressure sensor which detects the intake manifold pressure at the downstream side of said throttle valve, and a control unit which receives as input the result of the detection by said pressure sensor and outputs a command signal to said cylinder number regulation unit so as to switch the number of operating cylinders from one to the other when said intake manifold pressure reaches a first switch value, and to switch back said number from that number to the previous number when said intake manifold pressure reaches a second switch value, which is characterized in that said first switch value is determined at a value equal to the intake manifold pressure which is substantially constant over a wide range of engine revolution speed before the switch while the second switch value is set at a value equal to the intake manifold pressure value which is substantially constant over a wide range of engine revolution speed after the switch if the number of the operating cylinders is switched from said number to said another number so as to make the engine output before such switching substantially identical with the engine output after such switching.

4,485,778

METHOD AND MEANS FOR IMPROVING PERFORMANCE OF DIESEL ENGINES

Bernard M. Oliver, 13310 La Paloma Rd., Los Altos Hills, Calif. 94022

Continuation of Ser. No. 125,200, Feb. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 063,537, Aug. 3, 1979, abandoned. This application Jul. 30, 1982, Ser. No. 403,882

Int. Cl.³ F02F *3/14*

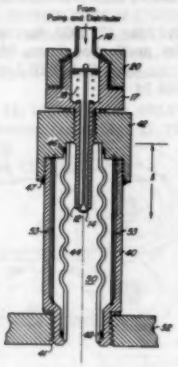
U.S. Cl. 123—254 **6 Claims**

1. Apparatus for a Diesel engine having an expandable combustion chamber, comprising:

a housing disposed to be attached to a boundary wall of the combustion chamber, and having an internal recess therewithin;

an insert mounted within the internal recess to form a permanently evacuated region between the outer surface of the insert and the surface of the internal recess and to form an initial combustion chamber that is substantially surrounded by the inner surface of the insert and that communicates with a combustion chamber; and

fuel inlet means attached to the housing and disposed to introduce fuel into the initial combustion chamber, said



fuel inlet means extending by a selected length into the initial combustion chamber for transferring heat from the initial combustion chamber to the quantity of fuel contained within said selected length prior to being introduced into the initial combustion chamber.

4,485,779

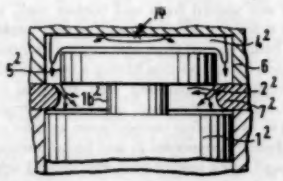
INTERNAL COMBUSTION PISTON ENGINE INCLUDING A CYLINDER HAVING A MAIN COMBUSTION CHAMBER AND AT LEAST ONE SECONDARY COMBUSTION CHAMBER

Joseph H. Spurk, Ausserhalb 3, 6123 Bad König, Oberkinzig, Fed. Rep. of Germany

Continuation of Ser. No. 451,223, Dec. 20, 1982, abandoned, which is a continuation of Ser. No. 177,550, Aug. 13, 1980, abandoned. This application Apr. 25, 1984, Ser. No. 604,124

Int. Cl.³ F02B *19/04*

U.S. Cl. 123—289 **5 Claims**



1. An internal combustion piston engine comprising:

(a) a cylinder having an inner wall defining a cylinder bore;

(b) a cylinder head having a wall and being mounted on said cylinder;

(c) a piston having a head and being reciprocably movable in said cylinder bore, said piston being formed as a stepped piston in which the portion of the axial length of the cylindrical wall adjacent the head thereof is of smaller diameter than the remainder of said cylindrical wall;

(d) a main combustion chamber formed between said cylinder head and said piston and in which combustion is initiated;

(e) a spark plug in said main combustion chamber for igniting gases in said main combustion chamber;

(f) at least one secondary combustion chamber formed by a

cavity in said smaller diameter portion spaced from said head of said piston, said secondary combustion chamber having a fixed volume less than that of said main combustion chamber, and at least one channel connecting said main and secondary combustion chamber, said connecting channel between said main combustion chamber and said secondary combustion chamber being formed by the annular gap between the cylindrical wall portion of smaller diameter of said piston and the inner wall of said cylinder; and

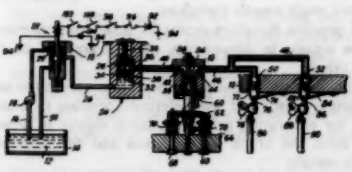
(g) control means for opening and closing said connecting channel between said main and secondary combustion chambers during a portion of each of the compression and expansion strokes of said piston intermediate and spaced from the ends of said respective strokes to regulate the flow of gases in said connecting channel, said control means being adapted to close said connecting channel for a sufficient time at the beginning of said portion of said compression stroke of said piston to further compress gas in said main combustion chamber while the pressure of the gas in said secondary combustion chamber remains substantially constant during said portion of said compression stroke and then, during said compression stroke following said portion thereof, to open said connecting channel just prior to TDC to release the pressure differential built up between said main and secondary combustion chambers and to permit gas to flow at high velocity from said main combustion chamber through said connecting channel into said secondary combustion chamber and thereby carry the flame front from said main combustion chamber to said secondary combustion chamber, creating strong turbulence and complete combustion of gas in said secondary combustion chamber, and to close said connecting channel after TDC for a sufficient time at the beginning of said portion of said expansion stroke of said piston to further expand gas in said main combustion chamber while the pressure of the gas in said secondary combustion chamber remains substantially constant during said portion of said compression stroke and then, during said expansion stroke following said portion thereof, to open said connecting channel to permit gas to flow at high velocity from said secondary combustion chamber through said connecting channel into said main combustion chamber creating strong turbulence of gas and complete combustion of any incompletely burned gas in said main combustion chamber.

4,485,780

COMPRESSION RELEASE ENGINE RETARDER

Robert B. Price, Manchester, and Stanislav Jakuba, West Hartford, both of Conn., assignors to The Jacobs Mfg. Company, Bloomfield, Conn.

Filed May 5, 1983, Ser. No. 491,993
Int. Cl.³ F02D *13/04*
U.S. Cl. 123—321 **9 Claims**



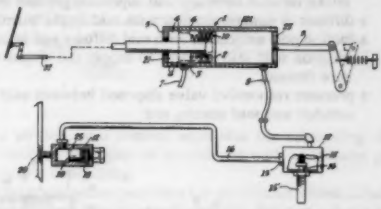
1. In an engine braking system of a gas compression release type including an internal combustion engine having intake valve means and exhaust valve means and pushtube means associated with each of said intake valve means and exhaust valve means, hydraulically actuated first piston means associated with said exhaust valve means to open said exhaust valve means at a predetermined time and second piston means actuated by said pushtube means associated with said exhaust valve means and hydraulically interconnected with said first piston means, the improvement comprising third piston means actuated by said pushtube means associated with said intake valve means and hydraulically interconnected with said first piston means and said second piston means.

4,485,781

ENGINE PROTECTION DEVICE

Richard W. Barnes, 301 N. 67 Ave., Hollywood, Fla. 33024

Filed May 16, 1983, Ser. No. 494,856
Int. Cl.³ F02D *17/04*
U.S. Cl. 123—342 **5 Claims**



1. An engine protection device for controlling engine speed of internal combustion engine comprising:

a throttle actuator means connectable to an engine speed regulator of the engine;

a pressure change responsive means connected between said throttle actuator means and the engine speed regulator;

a sensing means connectable to the engine, said sensing means for sensing the increase in engine temperature; and

a fluid connecting means connected to said pressure change responsive means and to said sensing means, said fluid connecting means for converting temperature increases from said sensing means to physical regulation through said pressure change responsive means;

said pressure change responsive means for varying said engine speed regulator means to idle or shut down the engine by sensing increases in engine temperature such that an undesirable increase in engine temperature varies said pressure change responsive means to effect the engine speed;

said throttle actuator means includes a throttle control and said engine speed regulator; and

said pressure change responsive means includes a variable fluid link means connected between said throttle control and said engine speed regulator;

said undesirable increase in engine temperature varies the pressure change responsive means to reduce the engine speed;

said variable link means includes an elongated hydraulic cylinder and a solid cylinder that fits snuggly into said elongated hydraulic cylinder;

said solid cylinder moving in response to an increase in engine temperature;

said elongated hydraulic cylinder includes a conduit for communication between said pressure change responsive means and said elongated hydraulic cylinder.

4,485,782

CONSTANT SPEED CONTROL DEVICES FOR VEHICLES

Naoji Sakakibara, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 11, 1983, Ser. No. 483,605
Claims priority, application Japan, Apr. 12, 1982, 57/61480; Apr. 12, 1982, 57/61481
Int. Cl.³ F02D *7/00*
U.S. Cl. 123—389 **5 Claims**

1. A constant speed driving device for a vehicle having an

intake conduit connected to an engine intake manifold, a supercharger provided in said intake conduit, an injector for injecting into a combustion chamber of the engine an amount of fuel in proportion to the amount of air supplied to the combustion chamber, and a throttle valve provided between said supercharger and said intake manifold; said constant speed driving device comprising

an actuator responsive to a negative pressure to control said throttle valve;

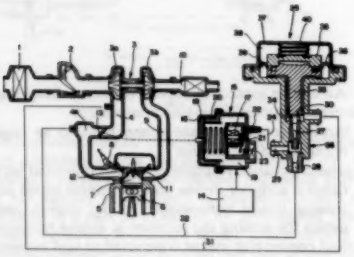
a negative pressure generator for supplying a negative pressure to said actuator, said negative pressure generator comprising

an ejector including a nozzle in communication with said intake conduit between said supercharger and throttle,

a diffuser in communication with said intake manifold,

a suction port associated with said diffuser and in communication with said actuator to supply the negative pressure thereto,

a pressure responsive valve disposed between said intake conduit and said nozzle, and



a servo-mechanism for operating said pressure responsive valve, said servo-mechanism having

a double-acting piston adapted to receive the output pressure of said supercharger on both ends thereof and

a valve for controlling the supply of output pressure of said supercharger to one end of said piston,

said pressure responsive valve being normally closed and being opened when the output pressure of said supercharger exceeds atmospheric pressure and is applied to only the other end of said double-acting piston; and

a computer for supplying a first control signal for controlling the negative pressure level in said actuator and a second control signal to operate said servo-mechanism valve, so that the operation of said throttle valve is controlled to maintain the vehicle speed at a predetermined value.

4,485,783

INTERNAL COMBUSTION ENGINE OF THE OTTO-TYPE OF CONSTRUCTION WITH AN IGNITION DISTRIBUTOR AND WITH AN ELECTRONIC IGNITION POINT-PERFORMANCE CHARACTERISTICS STORAGE DEVICE

Dusan Gruden, Ditzingen, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

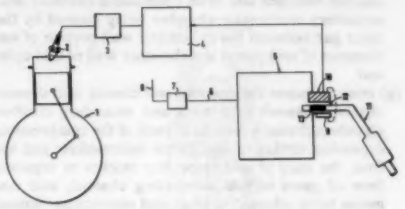
Filed Nov. 12, 1982, Ser. No. 440,959

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144733

Int. Cl.³ F02P *5/14*

U.S. Cl. 123—406 **4 Claims**

1. An internal combustion engine of the Otto-type construction, comprising an ignition distributor means, an electronic ignition point-performance graph storage means, a fuel tank having a filler pipe connected with the internal combustion engine by way of a feed line, characterized in that the ignition point-performance graph storage means is operatively connected with a pulse transmitter means coordinated to the filler pipe which is operable to be influenced by a signalling means



signalling the fuel quality and provided at a filling nozzle of a filling station in such a manner that the performance graph of the ignition point-performance graph storage means is matched to the octane value of the then-tanked medium.

4,485,784

AN ENGINE IGNITION CONTROL CIRCUIT HAVING A FAILSAFE FOR A CRANK ANGLE SENSOR

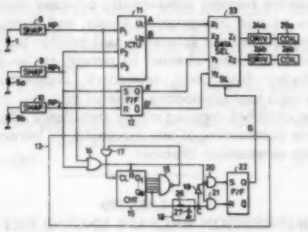
Masahiko Fujii, Kanagawa, and Yoshiaki Hirosawa, Samitama, both of Japan, assignors to New Nippon Electric Co., Ltd., Osaka and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Jun. 29, 1982, Ser. No. 393,321

Claims priority, application Japan, Jun. 30, 1981, 100414

Int. Cl.³ F02P *5/00*

U.S. Cl. 123—416 **10 Claims**



1. An engine ignition control circuit, operatively connected to an engine crank by a crank angle rotor and to an ignition coil, comprising:

a crank angle sensor positioned across from the crank angle rotor, sensing and angle of the engine crank and generating crank angle signals therefrom;

reference position detection means for generating reference position signals in dependence upon a position of the engine crank;

ignition timing control means, operatively connected to said crank angle sensor and said reference position detection means, for generating primary ignition signals in dependence upon the crank angle signals and the reference position signals;

replacement ignition signals generation means, operatively connected to said reference position detection means, for generating replacement ignition signals, in dependence upon the reference position signals, as back-up for the primary ignition signals when the crank angle signals fail;

crank angle signal monitoring means, operatively connected to said crank angle sensor and said reference position detection means, for generating a malfunction detection signal when the crank angle signals fail; and

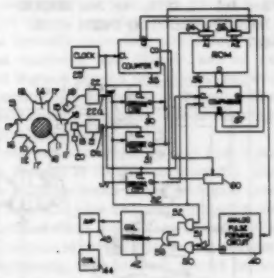
data selector means, operatively connected to said ignitiion timing control means, said replacement ignition signal generation means, said crank angle signal monitoring means and the ignition coil, for selecting and passing therethrough as ignition control signals and the primary ignition signals or the replacement ignition signals in dependence upon the malfunction detection signal, thereby replacing the primary ignition signals with the replacement ignition signals when the crank angle signals fail.

4,485,785

INTERNAL COMBUSTION ENGINE FUNCTION CONTROL SYSTEM

William F. Hill, Stafford, England, assignor to Lucas Industries, Birmingham, England

Filed May 19, 1982, Ser. No. 379,705
Claims priority, application United Kingdom, Jun. 5, 1981, 8117293; Apr. 8, 1982, 8210580
Int. Cl.³ F02P 5/04
U.S. Cl. 123—418 5 Claims



1. An internal combustion engine function control system comprising:

signal generating means, mechanically driven by the engine, for providing a first signal train and a second signal, both the first signal train and the second signal train having a frequency equal to the required function frequency;

engine parameter sensitive means for varying the phase of the first signal train relative to the second signal train;

function timing means responsive to the first signal train and to the second signal train, said function timing means including

first time measuring means for measuring the time which elapses between two predetermined points of the second signal train during each cycle thereof,

second time measuring means for measuring the time which elapses between a predetermined point of the second signal train and a predetermined point of the first signal train during each cycle of the second signal train,

third time measuring time means for measuring the time which elapses from a point on the second signal train during each cycle thereof,

a memory addressed by the first and second time measuring means, and

a comparator having one input reponsive to the output of the memory and another input responsive to the third time measuring means; and

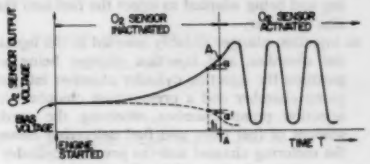
an output circuit triggered by the output of the comparator.

4,485,786

AIR-FUEL RATIO CONTROL APPARATUS

Yuichi Kashimura, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 15, 1983, Ser. No. 514,273
Claims priority, application Japan, Jul. 15, 1982, 57-122066
Int. Cl.³ F02D 33/00
U.S. Cl. 123—440 7 Claims



1. An air-fuel ratio control apparatus for controlling the air-fuel ratio of an engine in accordance with an exhaust gas sensor output comprising:

an exhaust gas sensor positioned in an exhaust system of said engine to sense the concentration of a selected exhaust gas component;

means for sampling an output voltage from said exhaust gas sensor;

means for computing the rate of change with time of the output voltage of said exhaust gas sensor in accordance with output voltage values sampled by said sampling means;

means for comparing said rate of change computed by said computing means and a preset value; and

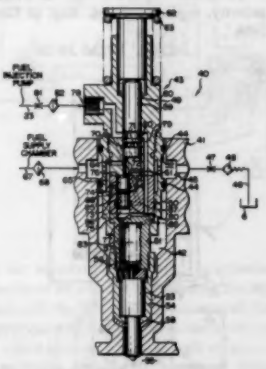
means responsive to the comparison result of said comparing means to control the initiation of an air-fuel ratio control.

4,485,787

FUEL INJECTION SYSTEM

Masaaki Kato, Toyoake, and Tetsuji Akashi, Oobu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 18, 1983, Ser. No. 524,316
Claims priority, application Japan, Aug. 27, 1982, 57-148767
Int. Cl.³ F02M 57/02
U.S. Cl. 123—446 12 Claims



1. A fuel injection system for an internal combustion engine, comprising:

fuel delivering means for delivering a predetermined amount of fuel in accordance with operating conditions of the engine; and

fuel injection means for injecting the fuel delivered from said

fuel delivering means into a combustion chamber of the engine, said fuel injection means including

a nozzle housing mounted at a cylinder head of the engine, the nozzle housing containing an injection cylinder chamber, a pressure cylinder chamber and a metering channel, the metering channel communicating said fuel delivering means to the injection cylinder chamber through the pressure cylinder chamber,

an injection nozzle disposed at one end of said nozzle housing and being adapted to inject the fuel into the combustion chamber,

an injection plunger slidably inserted in the injection cylinder chamber, said injection plunger being adapted to partition the injection cylinder chamber into an injection pump chamber and a pressurizing chamber therein, the injection pump chamber receiving the predetermined amount of fuel from said fuel delivering means through the metering channel and the pressure cylinder chamber,

a pressurizing plunger slidably fitted in the pressure cylinder chamber, the pressurizing plunger defining a pressure pump chamber which communicates with the pressurizing chamber in the injection cylinder chamber, the metering channel being opened and closed by the movement of the pressurizing plunger,

supplying means for supplying a fluid to the pressure pump chamber and the pressurizing chamber, and

pressurizing plunger driving means adapted to reciprocate said pressurizing plunger in synchronism with the engine so that the metering channel is opened to supply the fuel from said fuel delivering means to the injection pump chamber when said pressurizing plunger moves in one direction, and the metering channel is closed and the fluid in the pressure pump chamber and the pressurizing chamber is pressurized, when the pressurizing plunger moves in another direction, and to move said injection plunger in a direction so as to pressurize the fuel in the injection pump chamber.

4,485,788

FUEL INJECTION INSTALLATION FOR A MULTI-CYLINDER AIRCRAFT ENGINE

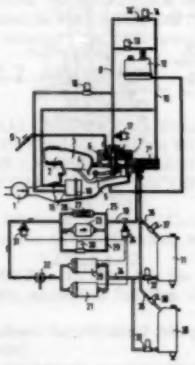
August Hofbauer, Pforzheim; Herbert Steinbeck, Hemmingen, and Hans Weiner, Muehlacker, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 12, 1983, Ser. No. 541,255

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1982, 3237964

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—452 **7 Claims**



1. A continuously operating fuel injection installation for a multi-cylinder aircraft engine, comprising suction pipe means, air quantity measuring means in said suction pipe means for measuring the through-flowing air quantity, a fuel quantity distributor means including control piston means, said control piston means being correspondingly adjusted by said air quantity measuring means, injection valves coordinated to the cylinders of the engine and operatively connected to the fuel distributor means, the fuel reaching the fuel distributor means by way of an inlet line, into which are interconnected at least a fuel filter and two electric fuel pump means disposed parallel to one another, characterized in that the pressure in the inlet line is measured by a pressure-measuring means operable to control the fuel pump means and operable to control together with a further pressure-measuring means a valve means connected into a bypass line bypassing the fuel filter.

4,485,789

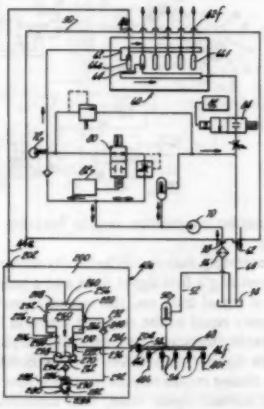
FUEL INJECTOR WITH INNER CHAMBER VACUUM

Richard P. Walter, Southfield, and Lael B. Taplin, Union Lake, both of Mich., assignors to The Bendix Corporation

Filed Jul. 31, 1981, Ser. No. 288,730

Int. Cl.³ F02B *3/00*; F02M *41/02*

U.S. Cl. 123—467 **20 Claims**



1. A fuel injector having metering and injection modes of operation and adapted to receive fuel from a first and a second source of pressurized fuel for injecting a pre-metered quantity of fuel into a diesel engine comprising:

a housing having a first port adapted to communicate with the first pressure source and a second port adapted to communicate with the second pressure source;

intensifier piston means reciprocatively received within said housing for defining an upper, a middle and a lower variable volume chamber therebetween; and

means for permitting a predetermined first quantity of fuel to be received within said middle chamber during the injection mode of operation, and for reducing thereafter the pressure level of said first quantity of fuel within said middle chamber to a first pressure level and for pressurizing said first quantity of fuel during said injection mode of operation.

4,485,790

HOLDING CONSTRUCTION OF A FUEL INJECTION VALVE IN AN INTERNAL COMBUSTION ENGINE

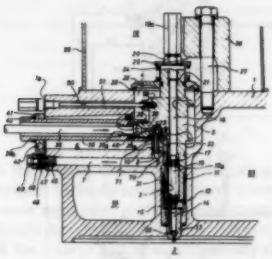
Takaaki Nishimura, Mino, and Hatsuo Takase, Kobe, both of Japan, assignors to Yanmar Diesel Engine Company Limited, Osaka, Japan

Filed Sep. 28, 1982, Ser. No. 425,977

Claims priority, application Japan, Apr. 19, 1982, 57-65596; Apr. 20, 1982, 57-57895[U]; Jun. 1, 1982, 57-94419

Int. Cl.³ F02M *55/02*

U.S. Cl. 123—468 2 Claims



1. A fuel injection valve construction for an internal combustion engine having a cylinder head, comprising:

a fuel injection valve arranged in a valve chamber in a central part of said cylinder head, said valve being formed with a laterally extending connecting portion having a conical receiving hole therein and an external thread formed thereon around said conical receiving hole;

a fuel injection pipe formed at its tip end with a conical taper to fit said conical receiving hole and having an outwardly extending annular flange;

a tightening tube surrounding said fuel injection pipe and having formed at its end an inwardly projecting flange and an internal thread fitting with said external thread;

said fuel injection pipe and said tightening tube being laterally inserted from a side face of said cylinder head and being connected to said connecting portion by tightening said tightening tube internal thread on said connecting portion external thread to directly connect said conical taper of said fuel injection pipe with said conical receiving hole of said fuel injection valve;

a leaking oil passage formed in said cylinder head and connected to a fuel-tank-side return pipe through a check valve;

an upwardly extending upwardly opening leaking oil inlet port formed in said cylinder head between said leaking oil passage and said valve chamber;

a downwardly opening leaking oil outlet port formed as a leaking-oil-passage-connecting part on said injection valve; and a vertically disposed connector in said valve chamber connecting said leaking oil outlet port to said leaking oil inlet port.

4,485,791

METHOD OF OPERATING A SINGLE SPOT FUEL INJECTED INTERNAL COMBUSTION ENGINE AND APPARATUS FOR SAME

Yuko Sugo; Tadahiro Yamamoto; Motomi Arai, and Masaaki Saito, all of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 24, 1980, Ser. No. 190,295

Claims priority, application Japan, Sep. 25, 1979, 54/132153[U]

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—478 6 Claims

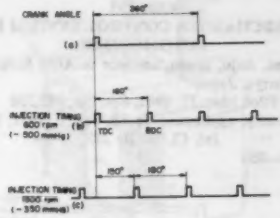
1. A method of operating a six cylinder internal combustion engine having a crankshaft, comprising the steps of:

forming an air-fuel mixture for said six cylinder engine using a single fuel injector;

detecting angular displacement of said crankshaft;

producing two fuel injection trigger pulses per crankshaft revolution for causing said single fuel injector to inject fuel twice per crankshaft revolution;

timing the output of said trigger pulses to correspond to the TDC and BDC positions of a piston of a selected one of said six cylinders;



detecting at least one operating parameter indicative of engine speed;

and

variably advancing the initiation of said trigger pulses according to said engine speed whereby the onset of each of said fuel injections is variably advanced according to said engine speed.

4,485,792

METHOD FOR SUPPLYING AN INTERNAL COMBUSTION ENGINE WITH LIQUEFIED PETROLEUM GAS AND APPARATUS FOR PERFORMING THE METHOD

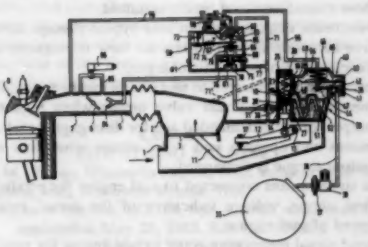
Jouke van der Weide, Rijswijk, Netherlands, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 21, 1982, Ser. No. 420,971

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1982, 3200864

Int. Cl.³ F02B *43/00*; F02M *21/04*

U.S. Cl. 123—527 12 Claims



1. A method for supplying an internal combustion engine with LPG by means of an apparatus including the intake manifold of the engine and the throttle valve mounted therein, and an evaporator-pressure regulating valve, said evaporator-pressure regulating valve having: yielding wall means; a movable valve element movable by the yielding wall means; and a compression spring, the method comprising the steps of:

applying said LPG under pressure to one side of said yielding wall means and applying the force of said compression spring and the pressure of a pneumatic control medium to the other side of said yielding wall means;

deriving the pressure of the pneumatic control medium applied to the other side of said yielding wall from the

intake manifold of the engine downstream of the throttle valve; and

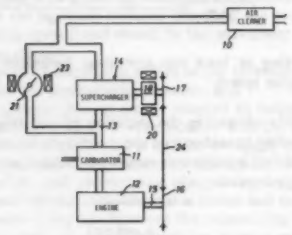
varying the pressure of the pneumatic control medium by superimposing a higher pressure as a function of operating parameters of the engine onto said pressure of the pneumatic control medium.

4,485,793

SUPERCHARGER CONTROL SYSTEM FOR AUTOMOBILES

Tomio Oguma, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 27, 1982, Ser. No. 382,730
Claims priority, application Japan, Jun. 5, 1981, 56-087264
Int. Cl.³ F02D *23/00*
U.S. Cl. 123—559 **4 Claims**



1. A supercharger control system for an internal combustion engine having an intake manifold comprising:

a supercharger;

air duct means for connecting said supercharger to said internal combustion engine;

clutch means coupling said engine and said supercharger for selectively deactivating said supercharger;

bypass passage means connected to said air duct means at a location between said intake manifold and said supercharger for bypassing said supercharger with a bypass air flow routed into said intake manifold;

valve means disposed within said bypass passage for selective actuation of said bypass air flow in response to the deactivation of said supercharger;

control means connected to said clutch means and said valve means for closing said valve means when high engine output torque is demanded and for disengaging said clutch means and opening said valve means when low engine output torque is demanded;

first signal means connected to said engine for producing a first output voltage indicative of the actual rotational speed of said engine;

second signal means connected to said engine for producing a second output voltage indicative of the throttle opening angle of said engine;

third signal means connected to said first and second signal means for comparing the value of said second output voltage with the value of said first output voltage to generate a third output voltage greater than said first output voltage only when the value of said second voltage is higher than the level of said first output voltage corresponding to a predetermined relationship between the values of said first and second output voltages; and

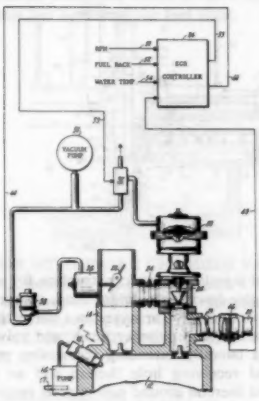
connecting means coupling said third signal means with said clutch means and valve means for engaging said clutch means and closing said valve means in response to said third output voltage.

4,485,794

METHOD AND APPARATUS FOR CONTROLLING DIESEL ENGINE EXHAUST GAS RECIRCULATION PARTLY AS A FUNCTION OF EXHAUST PARTICULATE LEVEL

John A. Kimberley, East Granby, and Robert H. Bullis, Avon, both of Conn., assignors to United Technologies Diesel Systems, Inc., Springfield, Mass.

Continuation-in-part of Ser. No. 432,500, Oct. 4, 1982, abandoned. This application Jan. 17, 1984, Ser. No. 571,409
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—569 **13 Claims**



1. Apparatus for controlling the recirculation of exhaust gas in a compression ignition engine having an exhaust gas recirculation duct connected between an exhaust duct from the engine and the air intake duct to the engine and valve means operatively associated with the recirculation duct and responsive to an exhaust recirculation control signal for relatively opening and closing said recirculation duct to the passage of exhaust gas therethrough, said apparatus comprising:

means adapted to be mounted in operative association with the exhaust gas stream passing through the exhaust duct from the engine for sensing the level of particulates in the exhaust gas stream and providing an output signal indicative thereof; and

control signal generating means responsive to engine operating condition signals including said particulate level signal for providing said exhaust recirculation control signal, said exhaust recirculation control signal being operative to regulate said recirculation duct valve means at least partly as a function of the sensed level of particulates in the exhaust gas stream.

4,485,795

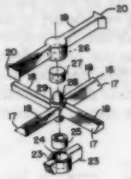
TURBO GAS ATOMIZER

Linda L. Lockard, P.O. Box 147, Clinton, Tenn. 37716

Filed Jan. 25, 1983, Ser. No. 460,870
Int. Cl.³ F02M *29/02*
U.S. Cl. 123—590 **3 Claims**

1. A fuel atomizer mounted between the carburetor and intake manifold of an internal combustion engine, the said atomizer adapted to atomize the globlets of fuel emanating from the carburetor and to comingle the same with combustion supporting air also emanating from the said carburetor, said atomizer comprising a cup-shaped housing provided with a pair of retainer rings for securing the said cup-shaped housing between said carburetor and said intake manifold, said housing having an impeller mounted for rotation therein, a cross bar having dovetail sections formed at both ends thereof, said dovetail sections on said cross bar extending into like dovetail

sections provided in the upper open ended portion of said cup-shaped housing, a cross member formed integral with the lower portion of the housing, spindle bearings press fitted in said cross bar and cross member, a network of interconnected cross bars secured to and extending across the lower or exit end portion of said housing, an opening formed in said impeller, a spindle press fitted in said opening in said impeller, and seats in the said spindle bearings, said impeller provided with



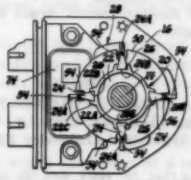
blades the leading edges thereof extending at an angle of 45° with respect to the direction of travel whereupon said impeller will rotate responsive to the vacuum created in the said intake manifold to thereby effect an atomization of the globlets of fuel in said fuel charge and to simultaneously comingle said atomized fuel with the said air before the combined charge of atomized fuel and combustion air is fed to the cylinders of an internal combustion engine.

4,485,796

IGNITION DISTRIBUTOR VOLTAGE GENERATOR

James A. Boyer, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 29, 1983, Ser. No. 518,670
Int. Cl.³ F02P 5/00
U.S. Cl. 123—617 **8 Claims**



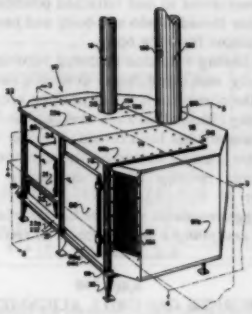
1. A pulse generator for generating a voltage, the amplitude of which is a function of the rotary position of a rotatable shaft comprising, a shaft, means for rotatably supporting said shaft, a pole piece formed of magnetic material having a plurality of circumferentially spaced axially extending pole teeth, a rotor rotatable with said shaft disposed within said pole teeth comprising a hub member formed of magnetic material carrying a plurality of circumferentially spaced radially extending permanent magnets, each permanent magnet being radially magnetized and arranged such that the outer tip portions thereof have the same magnetic polarity, and the inner end faces thereof carried by said hub member have an opposite magnetic polarity, the circumferential spacing of said permanent magnets and pole piece teeth being such that a plurality of permanent magnets are aligned with a plurality of pole teeth at predetermined angular positions of said rotor, an annular pick-up coil disposed within said pole teeth, and a magnetic circuit coupled to opposite ends of said permanent magnets providing a path for flux linking said pick-up coil comprising said hub member.

4,485,797

WOOD BURNING STOVE AND OVEN

Sebastiano D'Alessandro, 74 Knockbolt Crescent, Scarborough, Ontario M1S 2P6, Canada

Filed Aug. 19, 1983, Ser. No. 524,665
Int. Cl.³ F24C 1/00
U.S. Cl. 126—1 A **4 Claims**



1. A wood burning stove comprising an essentially air tight firebox module having three or more sides including a front side, an essentially horizontal cooking top and a bottom, both of said cooking top and bottom extending outwardly from all sides except the front side to form firebox flanges;

a fire door at the front of the firebox;

a draft control means;

a chimney attachment means disposed to the rear and the top of the firebox;

a grate;

leg support means;

an air tight oven module secured to the said firebox flanges, said oven module having an oven door, three or more sides including an open side which is secured to the firebox module and a front side, an essentially horizontal top and a bottom, the said horizontal top and bottom extending outwardly from all sides except the front and open sides to form oven flanges, and,

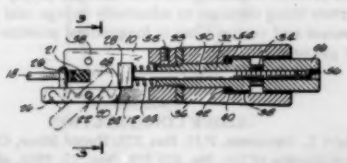
an air tight air heating chamber module secured to the said firebox and oven flanges, said air heating chamber module having an outlet duct which may be connected to a home heating system and air intakes disposed to one side of the front side of the firebox module and to the other side of the front side of the oven module.

4,485,798

BOW STRING RELEASE

Harold M. Hamm, Wisconsin Rapids, Wis., assignor to H. H. & A. Sports, Inc., Wisconsin Rapids, Wis.

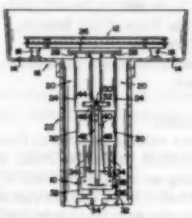
Continuation of Ser. No. 137,288, Apr. 4, 1980, abandoned. This application May 20, 1983, Ser. No. 496,392
Int. Cl.³ F41B 5/00
U.S. Cl. 124—35 A **5 Claims**



1. A bow string release comprising, a body having a string receiving notch therein,

a sear pivoted in the body adjacent the notch and having string retaining means operative to retain a bow string in the notch when the sear is in its operative position,
a release plunger slidably mounted in said body for movement between a first position and a retracted position, said plunger engaging said sear in said first position to retain the sear in its operative position and releasing said sear upon movement to said retracted position,
a connector threaded into said body and having an enlarged head remote from the body,
a handle having a portion captured between said head and the body and being freely rotatable on the connector when the connector is in one position relative to the body and being clamped between said head and the body when the connector has been threaded further into the body,
said release plunger extending through the connector and permitting rotation of the connector relative to the plunger,
and a trigger rotatable with the handle relative to the connector and plunger and operative to retract the plunger.

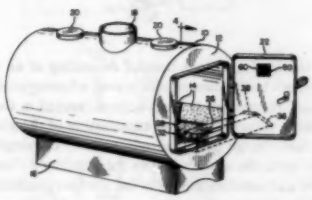
4,485,799
DUAL BURNER GAS GRILL ALIGNMENT DEVICE
Manuel Perez, 11204 Hidden Valley, Tampa, Fla. 33624
Filed Oct. 20, 1983, Ser. No. 543,628
Int. Cl.³ F24C *3/00*; F23Q *9/00*
U.S. Cl. 126—39 E **3 Claims**



1. An alignment device for use with a dual burner gas grill wherein the gas grill includes a pair of gas supply tubes affixed to a burner element, each said gas supply tube having a venturi telescopingly disposed therein movable between a fully extended and fully retracted position, said venturi tubes being disposed in substantially parallel relationship relative to each other; said alignment device comprising a base plate coupled on opposite end portions thereof to the periphery of said venturi tubes, said base plate having an alignment element included inwardly relative to the longitudinal axes of said venturi tubes to engage the side portions of said dual venturi tubes to maintain the spacing between said dual venturi tubes during movement between said fully extended and fully retracted positions and a securing element comprising a first locking member including at least one protrusion coupled to said base plate by an elongated flexible interconnecting member and a second locking member including an aperture formed on a cross member extending between said gas supply tubes, said aperture being disposed to selectively engage said protrusion to secure said venturi tubes in longitudinal position relative to said gas supply tubes.

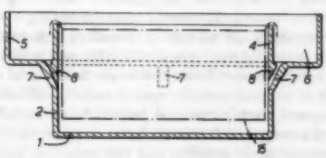
4,485,800
STOVE CONSTRUCTION
Robert L. Stevenson, P.O. Box 370, Rogue River, Oreg. 97537
Continuation of Ser. No. 320,859, Nov. 13, 1981, abandoned.
This application Oct. 7, 1983, Ser. No. 539,794
Int. Cl.³ F24C *1/14*
U.S. Cl. 126—77 **1 Claim**

1. A stove construction comprising
a longitudinally cylindrical firebox having vertical front and rear end walls,
fire supporting means on the bottom of said firebox,
a loading door in said front wall,
a flue outlet positioned rearwardly of said front wall,
a tubular main draft leading laterally into said firebox from the exterior immediately adjacent said front wall and at the lower portion of said door opening above said fire supporting means,
said main draft having an inner portion in said firebox with an opening facing rearwardly of said firebox and disposed immediately above said fire supporting means, said opening in the inner portion of said firebox being of a size so as to have a draft flow capacity less than the draft flow capacity of said main draft to create an increased velocity of the draft in the area of its outlet into the firebox,



adjustable damper control means on the exterior of said main draft,
said damper control means comprising a door having a movable connection with said main draft and arranged to be forced open in the event of pressure being developed in said firebox, said control means door having an adjustable damper control means thereon for supplying air to said main draft,
an auxiliary draft in said loading door adjacent the top portion and centrally thereof,
said loading door being dimensioned and said auxiliary draft being disposed such that said auxiliary draft is in an upper one-third of said firebox,
and adjustable damper control means associated with said auxiliary draft.

4,485,801
COOKING UTENSILS
Wyndham Hodges, Highfields, Cwm La., Rogerstone, Gwent, and Collin E. Symonds, 4 Ombersley Rd., Newport, Gwent, both of Wales
Filed Oct. 25, 1983, Ser. No. 545,346
Int. Cl.³ A47J *27/58*
U.S. Cl. 126—386 **9 Claims**



1. A cooking pan comprising an integrally formed structure having a base and a wall upstanding from the periphery of the base and dividing around the rim to form an overspill trough, there being small bore ducting of a diameter in the range 2–7 mm and 8 to 25 mm in length formed within the thickness of the wall leading down from the base of the trough to open into the interior of the pan, said small bore ducting being entirely

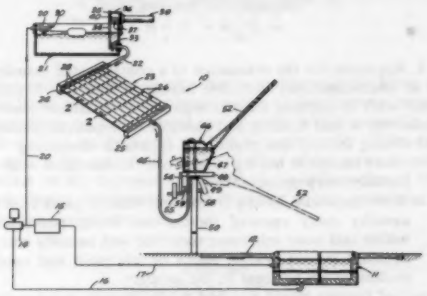
surrounded by said wall and tapering, being wider at the lower end than at the upper.

4,485,802

SOLAR HEATER FOR SWIMMING POOLS

Horace W. Babcock, 2189 N. Altadena Dr., Altadena, Calif. 91001

Filed Nov. 9, 1981, Ser. No. 319,122
Int. Cl.³ F24J 3/00
U.S. Cl. 126—416 **15 Claims**



1. Solar water heating apparatus for use with a swimming pool surrounded by an apron comprising:

solar heater means supported in an inclined elevated position adjacent the outer perimeter of said pool apron;

first duct means for supplying water to be heated to the upper end of said solar heater means for gravity flow therethrough;

bistable water collecting and dumping means adjacent the inner perimeter of said pool apron operable to discharge the contents thereof when substantially full into said pool; and

duct means positioned at a height above said pool apron adequate to avoid obstructing the free passage therepast of persons using said pool apron and having its ends interconnecting said bistable water collecting and dumping means and the lower outlet end of said solar heater means; and

said solar heater means positioned at a substantial height above said bistable water collecting and dumping means.

11. A method of returning heated water from a solar water heater mounted on the roof of a building to an adjacent swimming pool of the type surrounded by a masonry apron without disturbing said apron and without obstructing the use of said apron by a passerby which improvement comprises:

mounting a bistable container substantially above the pool apron and adjacent the outer edge thereof which container is normally biased to an upright filling position and is temporarily tiltable automatically to a non-upright dumping position when filled with a predetermined quantity of water;

conducting heated water from said solar heater to said bistable container by duct means positioned sufficiently above said masonry apron as not to obstruct the use of said apron by a passerby; and

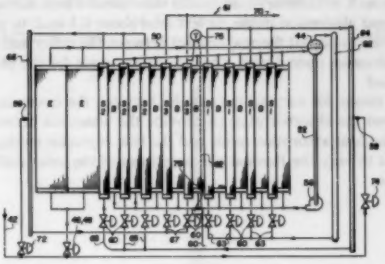
providing said container with dispensing duct means operable to dump the contents thereof across the pool apron and into the pool when tilted to said non-upright position without obstructing the use of the apron by a passerby.

4,485,803

SOLAR RECEIVER WITH INTERSPERSED PANELS

Murray Wiener, Akron, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 14, 1982, Ser. No. 434,216
Int. Cl.³ F24J 3/02
U.S. Cl. 126—422 **21 Claims**



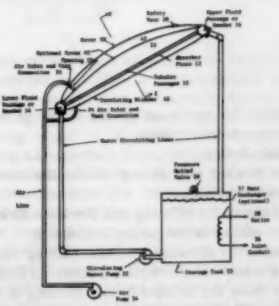
1. A solar receiver for receiving solar radiation energy comprising a plurality of panels of vapor generating tubes for receiving a flow of liquid to be heated to generate a vapor which generated vapor is mixed with the liquid, means for separating the vapor from the liquid, and a plurality of panels of superheating tubes for receiving a flow of the vapor to superheat the vapor, said vapor generating tube panels include outlet means flow connected to said separating means for discharging the generated vapor to said separating means, said superheating tube panels include inlet means flow connected to said separating means for receiving the generated vapor from said separating means, said vapor generating tube panels and said superheating tube panels are disposed in side-by-side relationship for receiving solar radiation energy, and said superheating tube panels are interspersed with said vapor generating tube panels over a sequence of at least twelve panels such that each sequence of four panels in said sequence of at least twelve panels comprises at least one superheating tube panel and at least one vapor generating tube panel.

4,485,804

SOLAR HEAT COLLECTOR SYSTEM

Timothy E. Sharpe, Lakehurst, N.J., assignor to T. E. Sharpe, Lakehurst, N.J.

Division of Ser. No. 230,307, Jan. 30, 1981, Pat. No. 4,360,005. This application Aug. 16, 1982, Ser. No. 408,462
Int. Cl.³ F24J 3/02
U.S. Cl. 126—426 **11 Claims**



1. A solar heat collector for absorbing and transmitting solar heat energy to a fluid, comprising:

(a) an absorber plate having a plurality of integral passages for flow of said fluid therethrough;

(b) a cover sheet substantially transparent to solar radiation covering the absorber plate on its solar exposure side so as to form an enclosed "dead air" thermal insulation space between the cover sheet and the absorber plate and reduce heat losses from the plate, said cover sheet being movable relative to the plate so as to provide spacing therebetween which is variable from greater than about 1 inch during a heat absorption mode, to less than about 0.5 inch to provide increased thermal contact between the cover and the absorber plate during a heat-rejection mode for the plate; and

(c) means for varying the spacing between the cover sheet and the absorber plate to provide the transition between the heat absorption mode and the heat rejection mode, so as to vary the thermal characteristics of the solar collector.

4,485,805

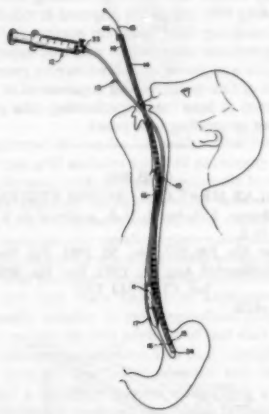
WEIGHT LOSS DEVICE AND METHOD

Lawrence H. Foster, Jr., Zephyr Cove, Nev., assignor to Gunther Pacific Limited of Hong Kong, Central, Hong Kong

Filed Aug. 24, 1982, Ser. No. 411,053

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—1 R **5 Claims**



1. Apparatus for use in achieving a loss of weight in an overweight person comprising:

an inflatable device;

means for placing said device within the stomach of the person without surgery;

additional means for inflating said device with liquid after it has been placed in the person's stomach;

further means for allowing both said placing means and said inflating means to be completely removed from the person so as to leave the inflated device floating in the person's stomach; and said further means including

a pull string having a rollable finger cot attached at one end, and a releasable, self-closing fill valve as part of the inflatable device.

4,485,806

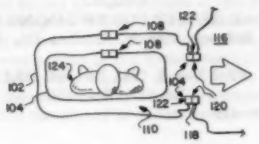
METHOD AND APPARATUS FOR EVACUATING CONTAMINATED CASUALTIES

Charles K. Akers, Williamsville, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,347

Int. Cl.³ A61B *19/00*

U.S. Cl. 128—1 R **7 Claims**



1. Apparatus for the evacuation of a contaminated casualty to an uncontaminated enclosure having at least one flexible panel with an opening therethrough and first fastener means connected to said opening and operable for repeated opening and closing thereof, said evacuation apparatus comprising:

an outer enclosure having at least one flexible panel with a casualty entry opening therein;

an inner enclosure having at least one flexible panel with a casualty entry opening therein and being positioned within said outer enclosure such that said casualty entry openings in said flexible panels of said inner and outer enclosures are adjacent to one another;

second fastener means attached to said casualty entry openings and operable for opening and closing said casualty entry openings to permit access to the interior of said inner enclosure, said second fastener means further providing for closing the space between said inner and outer enclosures when said casualty entry openings are opened such that said space remains uncontaminated regardless of operation of said second fastener means;

a casualty extraction opening in said flexible panel of said outer enclosure; and

third fastener means attached to said casualty extraction opening and operable for opening and closing said casualty extraction opening, said third fastener means being compatible with at least a portion of said first fastener means to permit coupling of said outer enclosure to said uncontaminated enclosure whereby the interior of said uncontaminated enclosure communicates with the uncontaminated interior of said outer enclosure such that a contaminated casualty encapsulated within said inner enclosure can be evacuated to said uncontaminated enclosure.

4,485,807

APPLICATOR FOR MASSAGING THE CUTANEOUS COVERING

Jean-Louis H. Guerét, Paris, France, assignor to L'Oreal, Paris, France

Filed May 17, 1982, Ser. No. 378,607

Claims priority, application France, May 27, 1981, 81 10584; May 3, 1982, 82 07654

Int. Cl.³ A61H *9/00*

U.S. Cl. 128—66 **21 Claims**

11. An applicator for massaging the cutaneous covering of a body, comprising

(a) an open-ended receptacle;

(b) dispenser means for a liquid product disposed within said receptacle;

(c) a flexible sole closing one end of said receptacle;

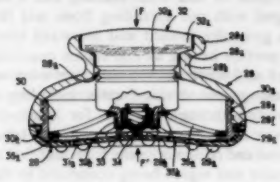
(d) means on said flexible sole defining reliefs and perforations;

(e) passage means to said liquid product dispenser means for

letting the liquid product pass towards the outside of said dispenser means through said perforations in the sole; and

(f) a surface of said dispenser means which is at least partly deformable and capable of being manually acted on by the user to produce discharge of a said liquid product through the perforations of the sole;

the improvement wherein said passage means for the liquid product are normally obturated and wherein means manually



operated by the user are provided to produce said discharge of the liquid product, said passage means of the dispenser means including a normally closed poppet valve which is capable of opening to let the liquid product pass outwardly of the dispenser means under the combined effect of the user's manual action on the dispenser means and of the deformation of the sole during the massage, said dispenser means comprising a bellows-shaped side wall.

4,485,808

ADJUSTABLE SPLINT

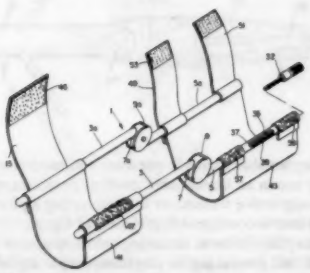
George R. Hepburn, Severna Park, Md., assignor to Dynasplint Systems, Inc., Baltimore, Md.

Filed Apr. 12, 1982, Ser. No. 367,598

The portion of the term of this patent subsequent to Aug. 9, 2000, has been disclaimed.

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—87 R **7 Claims**



1. An adjustable splint assembly comprising a lower strut, an upper strut pivotably connected to said lower strut, one of said struts having at one end thereof a pivotably mounted head portion including a cam surface, the other of said struts comprising a tubular member having a longitudinal bore therein, adjustable biasing means located within the longitudinal bore in said tubular member and comprising a camming element located in said bore at one end of said tubular member and adapted to engage said cam surface of the head portion of the said one strut, spring means located within said bore for exerting a force on said camming member so as to bias said camming member into engagement with said cam surface of said head portion thereby to apply a quantifiable force tending to approximate said upper and lower struts, an adjustment means located at the other end of said tubular member for enabling the force exerted by said spring means on said camming element to be adjusted from the said other end of said tubular member, measuring means associated with said adjustment means for indicating the force exerted by said spring means, and means for securing said splint assembly to a limb.

4,485,809

FILM WINDOW DRESSING

James P. Dellas, East Brunswick, N.J., assignor to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Dec. 11, 1981, Ser. No. 329,969

Int. Cl.³ A61L *15/00*

U.S. Cl. 128—156 **5 Claims**

1. An adhesive dressing comprising a transparent polymeric film from 0.6 to 10 mils in thickness and having a moisture vapor transmission rate of at least 15 grams per 100 square inches per 24 hours and being impervious to liquid water, a skin adherent adhesive coating on one surface of said film, a release sheet covering said adhesive coating, a perforation line in said film spaced inwardly from the periphery of the film, a cut line in said release sheet in alignment with the perforations in said film to enable the central portion of the release sheet to be removed from the film and the remainder of the dressing without breaking the perforations in said film.

4,485,810

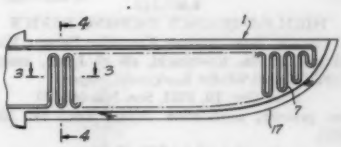
SURGICAL CUTTING BLADE

Robert Beard, Placerville, Calif., assignor to Oximetrix, Inc., Mountain View, Calif.

Filed Oct. 28, 1980, Ser. No. 201,603

Int. Cl.³ A61B *17/32*

U.S. Cl. 128—303.1 **5 Claims**



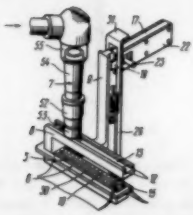
1. A surgical cutting blade adapted to be heated to a predetermined temperature within a predetermined temperature range to provide simultaneous hemostasis during surgery to control bleeding, said cutting blade comprising a metallic member having a pair of opposed flat face portions and a tapered cutting edge portion disposed therebetween along one edge of the member, a heating structure secured to one of the flat face portions substantially throughout the length of the member having said cutting edge thereon for heating said length of the member thoroughly including the cutting edge thereof, said heating structure comprising an elongate strip of conductive material having a thickness in the order of 0.4 mils secured over substantially all of the area of said one flat face portion along said length of the member and being formed in a very narrow width relative to the width of the member, an adhesive directly securing said conductive strip to said one face portion while spacing it from said face portion, said adhesive having thermally conductive and electrically insulative

properties, and electrical leads directly connected to said conductive material strip and directed away from the end of the member containing said cutting edge for connecting the strip to an external power source.

4,485,811
RESECTION APPARATUS

Alexandr F. Chernousov; Sergei A. Domrachev, both of Moscow; Alexei I. Ivanov, Kalinin; Boris N. Malyshev, Moscow; Viktor A. Saljuk, Moscow; Oleg K. Skobelkin, Moscow, and Evgeny I. Brekhov, Moscow, all of U.S.S.R., assignors to Vsesojuzny Nauchny Tsentr Khirurgii, Moscow, U.S.S.R.

Filed Apr. 27, 1982, Ser. No. 372,140
Claims priority, application U.S.S.R., Feb. 8, 1980, 2881888
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 4 Claims

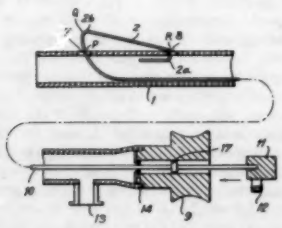


1. A resection apparatus comprising a die for bending staples, a holder having a first member parallel to said die and rigidly coupled thereto and a second member offset transversely of said first member and rigidly connected to said first member, said first member including means for receiving, interchangeably, a stapling device or a cutting device so as to position the stapling device or the cutting device in an operational relationship with the die, said second member including retainer means for locking said stapling device in position when received in said means for receiving and a hold-down frame mounted on said second member transversely in the plane of movement of said stapling device, said first member provided with guide ways, said guide ways adapted for said cutting device to move on.

4,485,812
HIGH FREQUENCY INCISING DEVICE

Shinichi Harada, Tsurugashima; Katsuhiko Furuya, Wako, and Kazukiyo Tamada, Kawaguchi, all of Japan, assignors to Kabushiki Kaisha Medos Kenkyusho, Japan

Filed Dec. 10, 1982, Ser. No. 448,781
Claims priority, application Japan, Dec. 11, 1981, 56-184836[U]
Int. Cl.³ A61B *17/39*
U.S. Cl. 128—303.15 12 Claims

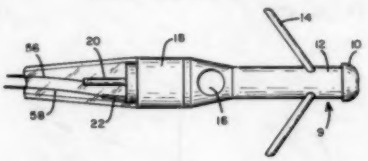


1. A high frequency incising device for use with an endoscope, comprising a flexible tube having a wall portion, a forward tip and a rearward end, a pair of longitudinally spaced openings in said wall portion including a rear opening and a front opening which is closer to said tip of said flexible tube than is said rear opening, an electrically conductive wire in said tube and a part of said wire exposed outside said tube, said exposed wire part including a first incising wire portion which extends from within said tube through said front opening in a direction substantially transverse to the axial direction of said tube in the region of said front opening and a second wire portion integral with and extending from said first incising wire portion generally toward said rearward tube end, said second wire portion having an end region constituting a first end region of said electrically conductive wire anchored at said rear opening, said device further including a movable member extending through the tube for longitudinal movement in opposite directions with respect to said tube, said wire having a second end region opposite from said first end region, said second wire end region being connected to the movable member such that the length of said first incising wire portion is determined by the position of said movable member, and means for electrically connecting said conductive wire with an electrical supply.

4,485,813
IMPLANTABLE DYNAMIC PRESSURE TRANSDUCER SYSTEM

Kenneth M. Anderson, Bloomington, and Dennis A. Brumwell, New Brighton, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 19, 1981, Ser. No. 322,814
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—675 10 Claims



1. An implantable dynamic pressure and motion transducer system for use in an implantable medical device comprising:
a force responsive transducer for converting a physiological signal into a corresponding electrical signal;
buffer amplifier means, receiving said transducer electrical signal, and producing an amplified output signal;
clock means for generating energizing pulses coupled to said buffer amplifier and said transducer for periodically activating said buffer amplifier and transducer; and
signal recovery means responsive to said output signal for recovering a signal corresponding to said physiological signal.

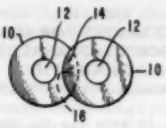
4,485,814
ONE-PIECE COMPOUND ELASTIC OCCLUDING MEMBER

In B. Yoon, 2213 Forest Ridge Rd., Timonium, Md. 21093

Filed Sep. 5, 1979, Ser. No. 72,683
Int. Cl.³ A61B *17/12*
U.S. Cl. 128—327 24 Claims

1. A one-piece, compound, elastic occluding member for ligating an anatomical tubular structure comprising:

first means for applying symmetrical, radial, inward pressure on the tubular structure; and



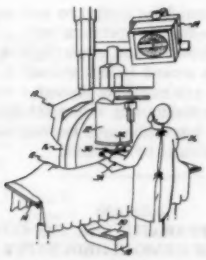
second means for simultaneously applying asymmetrical, lateral pressure on the tubular structure.

4,485,815

DEVICE AND METHOD FOR FLUOROSCOPE-MONITORED PERCUTANEOUS PUNCTURE TREATMENT

Kurt Amplatz, 10 Evergreen Rd., St. Paul, Minn. 55110, and Frank Kotula, 4058 Nevada Ave. North, New Hope, Minn. 55427

Filed Aug. 30, 1982, Ser. No. 412,594
Int. Cl.³ A61B *17/34*
U.S. Cl. 128—329 R **17 Claims**



1. A device for performing fluoroscope-monitored percutaneous puncture treatment of a patient in which an x-ray beam is projected from an x-ray source along a path defined by an x-ray beam axis through the patient to an x-ray receiver and in which a fluroscopic field of view is displayed based upon the x-ray beam received by the receiver, the device comprising:

a radiopaque needle for insertion into the patient's body, the needle having a distal end with a puncturing tip and a proximal end;

a handle having a radiolucent central portion and a grip portion extending away from the central portion, the grip portion having a pair of grips on opposite sides of the central portion so that the grips are outside of the x-ray beam when the central portion is positioned within the x-ray beam; and

means for connecting the proximal end of the needle to the central portion of the handle so that the needle is generally perpendicular to an elongated axis through the grips, the needle being visible in the fluoroscopic field of view and the central portion of the handle appearing essentially transparent.

4,485,816

SHAPE-MEMORY SURGICAL STAPLE APPARATUS AND METHOD FOR USE IN SURGICAL SUTURING

John F. Krumme, Woodside, Calif., assignor to Alchemia, Palo Alto, Calif.

Filed Jun. 25, 1981, Ser. No. 277,112
Int. Cl.³ A61B *17/04, 17/08, 17/12*
U.S. Cl. 128—334 R **14 Claims**

1. A method of drawing together and joining in intimate contact discrete portions of living tissue, comprising the steps:

(a) providing a surgical staple made of a shape-memory material, said staple being formed into a closed shape at a temperature above the transition temperature of said material, and subsequently deformed into an open shape at a temperature below said transition temperature;

(b) engaging the open staple by a mechanical jaw and positioning the open staple to extend between, and be in contact with each of said portions of living tissue;

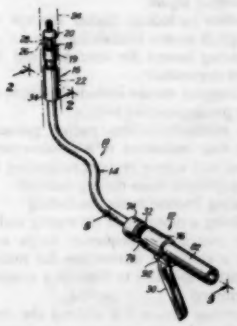
(c) heating said staple by passing a electric current therethrough from the jaw to elevate the staple to a temperature above the transition temperature to close the staple, drawing together and joining the tissue.

4,485,817

SURGICAL STAPLER APPARATUS WITH FLEXIBLE SHAFT

Brian E. Swiggett, Oyster Bay, N.Y., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed May 28, 1982, Ser. No. 383,129
Int. Cl.³ A61B *17/04*
U.S. Cl. 128—334 R **11 Claims**



1. An apparatus for applying surgical fasteners, said apparatus comprising:

applicator means for applying fasteners to tissue; said applicator means including applying means and anvil means for cooperating with said applying means to apply the fasteners to tissue;

actuator means for actuating said applicator means to apply fasteners to tissue; and

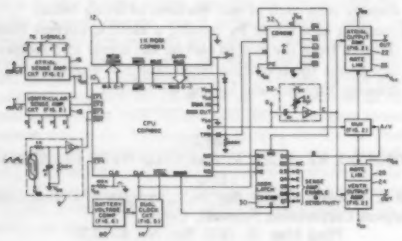
shaft means connecting said applicator means and said actuator means, said shaft means being substantially flexible to bend during insertion into a body channel to conform to the configuration of the body channel into which the apparatus is inserted for the particular surgical operation being performed and capable of retaining said configuration during actuation; said shaft means being for transmitting a first, relatively small force from said actuator means to said applicator means hydraulically, and comprising first and second sleeves, said first sleeve being within said second sleeve, and said actuator means comprising slide means secured to said first sleeve for moving said anvil means toward or away from said applying means; said applicator means being for producing, responsive to said first force, a second force larger than said first force, for applying the fasteners to tissue; and said applicator means further comprising means for hydraulically maintaining a selected gap between said anvil means and said applying means during application of the fasteners to tissue.

4,485,818

MULTI-MODE MICROPROCESSOR-BASED PROGRAMMABLE CARDIAC PACER

Michael E. Leckrone, Fort Lauderdale, and Vincent T. Cutolo, Jr., Miami, both of Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Nov. 14, 1980, Ser. No. 207,003
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **8 Claims**



1. A computer-controlled cardiac pacer, comprising

sense means for sensing cardiac activity and issuing a corresponding output signal,

computer means including digital storage means having stored program means containing a series of instructions and processing means for fetching and executing said instructions sequentially,

said stored program means including means defining recycling main pacing routine means,

said storage means including pacing parameter registers containing data indicative of a predetermined minimum rate interval and a scan register indicating the number of passes through said main pacing routine,

said main pacing routine means including

means defining a plurality of diverging and reconverging alternate instruction sequence loops each returning through a common instruction for incrementing said scan register, the time to execute a nominal loop being predetermined as a scan period,

loop adjustment means for making the time to execute each of the other loops equal to an integral number of scan periods, and

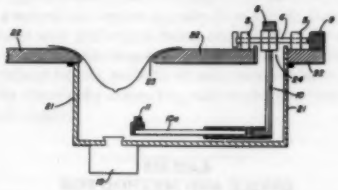
means for cyclicly monitoring the output of said sense means and the current number in said scan register during a given scan and said data in said parameter registers, for producing a programmed stimulation output when said scan register attains a number corresponding to said minimum rate interval and for resetting said scan register upon attaining a number corresponding to said minimum rate interval.

4,485,819

MECHANICAL ACCESSORY FOR COMMERCIALLY AVAILABLE COMPOUND APPARATUSES FOR ECHO MAMMOGRAPHY

Wolfgang Igl, Linprunstrasse 35, 8000 München 2, Fed. Rep. of Germany

Filed Jan. 19, 1981, Ser. No. 225,953
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 3002067; Nov. 7, 1980, 3042079
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **18 Claims**



1. Mechanical accessory apparatus for a device conducting echomammography for ultrasonic examination of the female breast, said apparatus comprising:

a water container with at least one aperture in a cover of the container, said cover generally occupying a plane and adapted for opposition with the chest;

a supporting arm projecting into said water container below said aperture;

at least one ultrasonic head carried by said supporting arm and directed towards the aperature; and

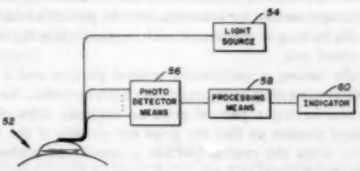
a rotary means for rotating said supporting arm in a semi-circular movement around an axis situated in the plane of said cover, said axis extending through a center point of the aperture for maintaining a constant distance, during rotation of said supporting arm, between said ultrasonic head and the breast to be examined.

4,485,820

METHOD AND APPARATUS FOR THE CONTINUOUS MONITORING OF HEMOGLOBIN SATURATION IN THE BLOOD OF PREMATURE INFANTS

Robert W. Flower, Cockeysville, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed May 10, 1982, Ser. No. 376,784
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—633 **6 Claims**



1. An oximeter for continuous non-invasive monitoring of hemoglobin saturation levels in premature infants, comprising:

an opaque contact means, having a concave surface adapted to fit over the globe of a patent's eye, for mounting on the eye in communication with the outer surface of the eye

cornea said contact means further having a plurality of holes therethrough with openings on the concave surface;

a light source capable of providing light at various frequencies;

at least one transmitting fiberoptic element means mounted into one of said holes, linking said contact means to said light source, for illuminating a substantial portion of the eye fundus;

at least one receiving fiberoptic element means mounted into one of said holes and terminating a predetermined distance from the concave surface of said contact means for collecting light scattered by a substantial portion of said eye fundus and for reducing the collection of cross-talk light from said at least one transmitting fiberoptic element means and light from said at least one transmitting fiberoptic element means which is backscattered by the cornea; and,

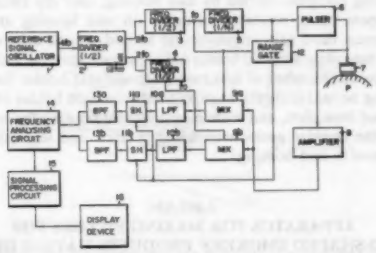
a detector, processor and indicator circuit means, linked by said receiving fiberoptic element to said contact means, for measuring the intensity of light radiation scattered by said eye fundus and for calculating and indicating hemoglobin saturation based upon the intensity of said scattered light for various frequencies of said illuminating light.

4,485,821

DOPPLER EFFECT BLOOD FLOW SENSING DEVICE DISPLAYING SIGNALS LYING WITHIN A BAND WIDTH RELATED TO SAMPLING FREQUENCY

Kazuhiro Iinuma, Sendai, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 25, 1982, Ser. No. 411,553
Claims priority, application Japan, Aug. 28, 1981, 56-135104
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—663 **3 Claims**



1. A plused ultrasound Doppler blood flow sensing device comprising:

rate pulse signal generating means for producing a rate pulse signal at a rate frequency f_r;

drive pulses signal generating means for producing a drive pulse signal in response to said rate pulse signal;

transducing means for emitting ultrasound pulses into an object under diagnosis in response to a drive pulse signal from said drive pulse signal generating means and for converting echos of the ultrasonic pulses returning from said object into electrical signals;

sampling and holding means for sampling and holding only the electrical signals of the echos returning from positions at a given depth of said object, said sampling occuring at a sampling rate f_r;

band pass filter means for extracting only the Doppler frequency shift signals from the sampled and held signals, said band pass means passing components of said sampled and held signals between 0 and $+f_r$;

frequency analyzing circuit for analyzing the frequencies of said doppler frequency shift signals;

signal processing means for processing said frequency analyzed Doppler frequency shift signals to obtain Doppler shifts; and

display means for displaying blood flow signals represents said obtained Doppler frequency shifts and have frequencies at least between the frequencies $-f_r$ and $+f_r$.

4,485,822

MULTI-PHASE INTERFACING SYSTEM AND METHOD

George L. O'Connor, Nesconset; Ralph E. Oswald, Lindenhurst, both of N.Y., and Marc A. Heppding, Crofton, Md., assignors to G & R Instrument Company, Inc., Lindenhurst, N.Y.

Filed Jan. 28, 1983, Ser. No. 461,878
Int. Cl.³ A61B *5/08*
U.S. Cl. 128—719 **11 Claims**

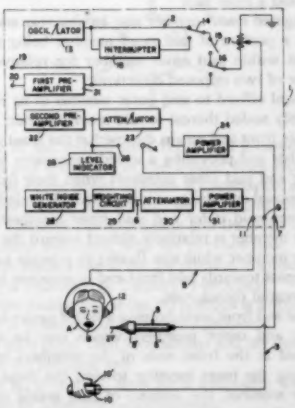
1. Apparatus for sampling the expired gas of a patient and delivering same secretion and liquid free to monitoring means comprising tube means for entering a facial orifice of said patient and terminating within said patient at a point where a sample of exhaled gases is to be extracted, means for mounting on the head of said patient for holding said tube means in place, and low dead space means for delivering said sample to said monitoring means including flexible tube means connected to said tube means for delivering said sample continuously to said monitoring means and including disc shaped filter means whose pore size is no more than 5 μm in said flexible tube means for blocking all liquids.

4,485,823

APPARATUS FOR DIAGNOSING ENVIRONMENTAL TISSUE OF TOOTH

Akiya Yamaguchi, Tokyo, Japan; Marvin M. Stark, and Kenneth B. Soelberg, both of San Francisco, Calif., assignors to Sankin Industry Co., Ltd., Osaka, Japan

Filed Aug. 17, 1981, Ser. No. 293,502
Claims priority, application Japan, Dec. 27, 1980, 55-189189
Int. Cl.³ A61B *5/05*
U.S. Cl. 128—739 **2 Claims**



1. An apparatus for diagnosing the environmental tissue of teeth comprising:

means for generating an electric oscillation output having a predetermined characteristic,

an electro-mechanical oscillation converter connected to said generating means for converting said electric oscillation output into mechanical oscillation,

an oscillation probe connected to said converter and adapted to be brought into contact with a patient's tooth for applying mechanical oscillation to the tooth,

means for indicating a response by the patient when he senses the threshold of the mechanical oscillation applied through said probe to his tooth,

means for measuring the characteristic of the electric oscillation output from said generation circuit at the time of the patient's response, and

an acoustic sound shielding means for shielding the ear of the patient from external noise conflicting with said mechanical oscillation.

4,485,824

METHOD AND APPARATUS FOR COLLECTING AND/OR GROWING PROTECTED BIOLOGICAL SPECIMENS

Laurel A. Koll, Ruleville, Miss., assignor to E & K Corporation, Ruleville, Miss.

Filed Mar. 1, 1982, Ser. No. 353,220
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—756 **35 Claims**

1. An instrument for obtaining a biological specimen, said instrument comprising:

an elongated hollow outer protective member having a rear end and a front end;

an elongated inner member also having rear and front ends with a portion of said inner member being slidably disposed within said outer member for relative motion in either of two opposed directions;

a rear seal affixed to said outer member at its rear end and slidably sealed thereat to said inner member;

a flexible front seal means disposed at the front of said inner member and providing a sealed connection between said outer and said inner members when their front ends are juxtaposed and also providing a slidable sealed connection between said outer and said inner members when said inner member is relatively moved toward the rear of said outer member while also flexing to provide a passageway therepast towards said front end in response to a pressure differential thereacross;

said rear and front seals defining a sealed cavity between said inner and outer members which can be controllably opened at the front ends of the members by relatively moving the inner member toward the front end of the outer member, the volume of said sealed cavity being controllably reduced by relatively moving the inner member toward the rear end of the outer member to thereby cause a pressure differential across said front seal; and

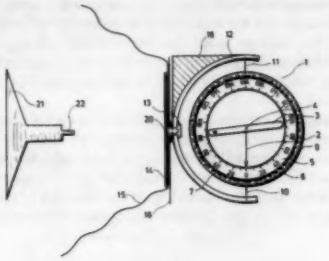
a specimen capturing structure disposed on said inner member between said front and rear seals.

4,485,825

INSTRUMENT FOR MEASURING POSITIONS AND DISPLACEMENTS OF JOINTS AND SPINAL COLUMN (ARTHROSPINOMETER)

László Domján; Géza Bálint, and Sándor Bozsóky, all of Budapest, Hungary, assignors to Medicor Muvek, Budapest, Hungary

Filed Jul. 27, 1982, Ser. No. 402,339
Int. Cl.³ A61B *5/08*
U.S. Cl. 128—774 **6 Claims**



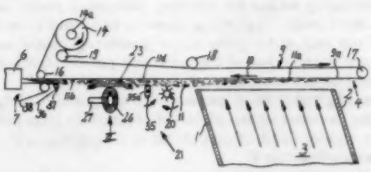
1. An instrument for measuring positions and displacements of portions of a human body, comprising a base plate, means for detachably securing the base plate to a portion of a human body, a holder mounted on the base plate rotatably about a first axis, said holder having a pair of arms, a housing pivotally carried between said arms rotatably about a second axis perpendicular to said first axis, a dip circle having a pointer and means for causing the circle to align the pointer to point vertically downward under the influence of gravity, a north-south-seeking compass carried by said housing, said dip circle and compass being rotatably mounted on said housing about a common third axis perpendicular to said second axis, one of said base plate and said holder having a scale thereon, indicator means on the other of said base plate and said holder for indicating on said scale the angular position of said holder relative to said base plate, and scale means on said housing for indicating the angular position of said dip circle and said compass relative to said housing.

4,485,826

APPARATUS FOR MAKING FILLERS FOR ROD-SHAPED SMOKERS' PRODUCTS HAVING DENSE ENDS

Uwe Holzangel, Glinde, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Apr. 28, 1980, Ser. No. 144,028
Int. Cl.³ A24C *5/14, 5/18*
U.S. Cl. 131—84 C **17 Claims**



1. Apparatus for removing the surplus of tobacco or like fibrous material from one side of a continuous stream, comprising conveyor means for moving the stream lengthwise so that one side of the stream remains exposed; compressing means for compacting spaced-apart portions of the moving stream; filler

segregating means including at least one rotary disc having a marginal portion extending into the moving stream, said marginal portion including at least one pocket having an open side facing the exposed side of the stream, the surplus of fibrous material extending beyond said marginal portion; means for rotating said disc at a peripheral speed which at least closely approximates the speed of lengthwise movement of the stream, said pocket being arranged to receive and temporarily confine parts of said compacted portions of the stream; and means for separating the material which extends beyond said marginal portion and is not confined in said pocket so that the thus treated stream is converted into a filler having portions which correspond to said spaced-apart portions of the stream and each of which contains a larger quantity of fibrous material than the remaining portions of the filler as a result of the compacting action of said compressing means and temporary confinement of said spaced-apart portions in said pocket.

4,485,827

APPARATUS FOR RECOVERING TOBACCO FROM UNSATISFACTORY CIGARETTES OR THE LIKE

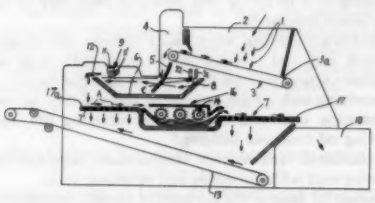
Werner Komossa, Börnsen; Hans-Adolf Barck, Dassesdorf, and Thomas Bahr, Glinde, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,488

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1982, 3202698

Int. Cl.³ A24C *5/36, 5/34, 5/18*

U.S. Cl. 131—84 C **11 Claims**



1. Apparatus for recovering the contents of particulate fillers of unsatisfactory cigarettes or analogous rod-shaped articles of the type wherein the filler is surrounded by a tubular wrapper, comprising means for converting a supply of unsatisfactory articles into a file and transporting successive articles of the file along a predetermined path, said converting means comprising a rotary centrifugal aligning device having an edge portion arranged to form and transport said file of unsatisfactory articles to said aligning device; opening means adjacent to a predetermined portion of said path and including at least one mobile wrapper-breaking implement arranged to open the wrappers of successive unsatisfactory articles lengthwise during transport of such articles along said protion of said path, said implement being likely to undergo damage in the course and as a result of its wrapper-breaking action; first means for monitoring the condition of said implement, including means for generating a first signal on detection of a defect in or on said implement, said monitoring means being out of contact with said implement; and second monitoring means including a plurality of optoelectronic transducers disposed at different distances from said edge portion of said aligning device and arranged to generate second signals denoting the quantity of unsatisfactory articles in at least a portion of said aligning device.

4,485,828

USE OF SUBSTITUTED METHYL ISOPROPYL CYCLOHEXENONES IN AUGMENTING OR ENHANCING THE AROMA OR TASTE OF SMOKING TOBACCO COMPOSITIONS AND SMOKING TOBACCO ARTICLE COMPONENTS

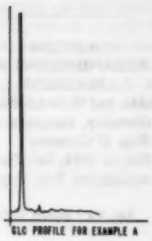
Philip T. Klemarczyk, Old Bridge; Lambert Dekker, Wyckoff, both of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 343,580, Jan. 28, 1982, Pat. No. 4,400,311.

This application May 5, 1983, Ser. No. 492,013

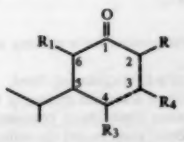
Int. Cl.³ A24B *3/12, 15/30;* **A24D** *1/00*

U.S. Cl. 131—276 **3 Claims**



GLC PROFILE FOR EXAMPLE A

1. A process for augmenting or enhancing the aroma or taste of a consumable material selected from the group consisting of smoking tobacco compositions and smoking tobacco article components comprising the step of adding to consumable material an aroma or taste augmenting or enhancing quantity of at least one compound defined according to the structure:



wherein one of the dashed lines represents a carbon-carbon double bond and the other of the dashed lines represents a carbon-carbon single bond; wherein R_4 represents methyl or ethyl; wherein one of R_1, R_2 and R_3 represents 2-methyl-1-propenyl or 2-methyl-1-propylidenyl; and the other of R_1, R_2 and R_3 represent hydrogen; with the provisos that:

(i) when the dashed line at the 3-4 position is a double bond, then R_3 is hydrogen or 2-methyl-1-propenyl;

(ii) when the dashed line at the 2-3 position is a double bond, then R_2 is hydrogen or 2-methyl-1-propenyl;

(iii) when R_4 is ethyl, then R_2 is methyl and the double bond is at the 2-3 position; and

(iv) when R_4 is methyl, then R_2 is hydrogen; 2-methyl-1-propenyl or 2-methyl-1-propylidenyl;

with the members of said genus being novel compounds when R_4 is ethyl or when R_4 is methyl and the double bond is at the 3-4 position or when R_4 is methyl and the double bond is at the 2-3 position with R_3 being hydrogen.

4,485,829

PROCESS FOR INCREASING THE FILLING POWER OF TOBACCO

Norman B. Rainer, Richmond, and Dean M. Siwiec, Chesterfield, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Feb. 7, 1983, Ser. No. 464,484
Int. Cl.³ A24B 3/18
U.S. Cl. 131—291 8 Claims

1. A process for increasing the filling powder of tobacco comprising:

contacting the tobacco with at least one basic calcium compound in an amount such that the treated tobacco has a pH of at least about 8; and then

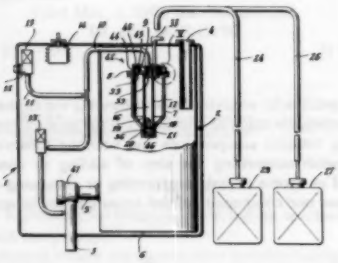
heating the tobacco in the presence of sufficient moisture to establish and maintain the OV value within the range of from about 14% to about 40% and at a temperature and for a time sufficient to increase the filling power of the tobacco.

4,485,830

CLEANSING ARRANGEMENT FOR A MILKING MACHINE

Friedrich Icking, Oelde, and Heinrich Bäcker, Langenberg, both of Fed. Rep. of Germany, assignors to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Sep. 3, 1981, Ser. No. 299,212
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1980, 3033816
Int. Cl.³ B08B 9/06
U.S. Cl. 134—100 31 Claims



1. A cleansing arrangement for a milking machine comprising:

(a) a first source of a first cleansing fluid;

(b) a second source of a second cleansing fluid;

(c) connecting means establishing communication between said first and second sources and the milking machine, said connecting means including a metering device for measuring predetermined amounts of said fluids, and said connecting means further including first and second conduits respectively connecting said first and second sources with and having respective first and second outlet openings at said metering device; and

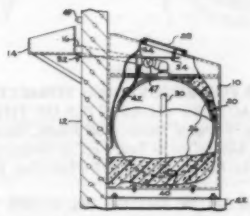
(d) valve means for said first and second conduits, said valve means including a first valve member movable between an open position for said first conduit and a closed position for said first conduit, and said valve means further including a second valve member movable between an open position for said second conduit and a closed position for said second conduit, said valve means also including an actuating member for said valve members movable between a rest position in which said valve members are in said closed positions and first and second opening positions in which said first and second valve members respectively are in said open positions, and said valve means additionally including a generally annular spring normally biasing said valve members into the respective closed positions, said spring having a pair of legs which respectively underlie said first and second valve members and terminate on either side of said actuating member, and said actuating member including a rotatable nose for selectively moving the respective legs of said spring away from said first and second valve members to thereby permit movement of the latter to the respective open positions.

4,485,831

COOKING OIL SALVAGE SYSTEM

Hugh J. Ungerleider, Louisville, Ky., assignor to D.O.C.E Corporation, Louisville, Ky.

Continuation-in-part of Ser. No. 415,329, Sep. 2, 1982, abandoned, which is a continuation of Ser. No. 197,685, Oct. 16, 1980, abandoned. This application May 20, 1983, Ser. No. 496,476
Int. Cl.³ B67D 5/02, 5/62
U.S. Cl. 137—1 13 Claims



1. A cooking oil salvage and disposal system, including means for receiving and transferring hot, used cooking oil from a food processing building through a vertical exterior wall of said building to a receiving tank mounted externally of said building which comprises:

A. a conduit extending horizontally through said exterior vertical wall and opening on the inner surface of said exterior vertical wall on the inside of said building;

B. a receiving tank on the exterior of said building, in communication with said conduit, for receiving hot, used cooking oil from said building;

C. an insulated tank storage compartment adjacent said exterior wall which contains said receiving tank;

D. a means for heating the contents of the tank to bring the contents of said tank to the proper viscosity for pumping;

E. an oil discharge tube for connection to a pump for removing the oil from the tank;

F. a normally-latched service door on said compartment, to provide access to said oil discharge tube; and

G. latch means operative from the interior of said building for opening said service door.

4,485,832

AUTOMATIC GAS SHUT-OFF VALVE

J. Robert Plemmons, 1005 Parkhill Dr., and Donald G. Rieck, 2525 Orange Ave., both of Costa Mesa, Calif. 92627

Filed Sep. 24, 1982, Ser. No. 423,030
Int. Cl.³ F16K 17/36
U.S. Cl. 137—38 10 Claims

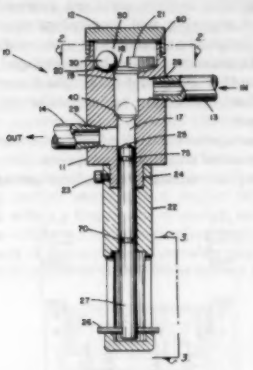
1. An automatic shut-off valve comprising,

a valve body with a central chamber therein,

inlet and outlet means communicating with said central chamber,

arcuate channel means having a substantially annular configuration and disposed within said valve body adjacent to and substantially encircling one end of said central chamber, and

actuator means disposed in said channel means until selectively dislodged therefrom into said central chamber be-



tween said inlet and outlet means to interrupt fluid flow therethrough.

4,485,833

RUBBERY CONJUGATED DIENE POLYMERS TERMINATED WITH HYDROCARBYL PHOSPHITES

Carl A. Uraneck, and John E. Burleigh, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 3, 1983, Ser. No. 500,680
Int. Cl.³ A60C *11/00*
U.S. Cl. 152—209 R **19 Claims**

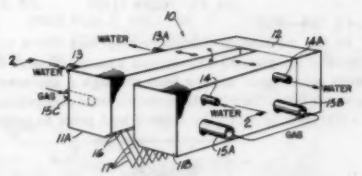
1. A cured rubber tire tread comprising a conjugated diene rubber selected from polymers of at least one conjugated diene and copolymers thereof with at least one monovinylarene wherein said conjugated diene rubber is a trihydrocarbyl phosphite or a trihydrocarbyl thiophosphite terminated solution polymerized conjugated diene rubber exhibiting a phosphorus content as P of about 0.005 to 0.3 weight percent.

4,485,834

ATOMIZATION DIE AND METHOD FOR ATOMIZING MOLTEN MATERIAL

Nicholas J. Grant, 10 Leslie Rd., Winchester, Mass. 01890

Filed Dec. 4, 1981, Ser. No. 327,698
Int. Cl.³ B22D *23/00*
U.S. Cl. 164—46 **16 Claims**



1. A method of atomizing molten material which exists as a solid at room temperature which comprises:

providing a free flowing stream of said molten material in the form of a sheet having a thickness of at least about 1 mm and a width of at least about 5 mm,

passing said free flowing sheet of molten material through a longitudinally configurated die space of sufficient opening to accommodate said molten material for atomization thereof,

said die space being defined by opposed linearly configurated die elements each having at least one linear array of gas flow orifices on each side thereof spanning the width of said sheet and directed towards said sheet of molten material,

each die element having a cooling chamber for receiving a circulation of cooling fluid therein and a chamber for receiving atomizing gas under superatmospheric pressure, said chamber having exit ducts which intersect with and are disposed transverse to conduits in communication with said array of orifices such as to provide resonating cavities in both said exit ducts and said orifice conduits,

said each linear array of orifices converging towards the other and oriented such as to direct atomizing gas under laminar flow conditions against a predetermined focal region of said molten sheet as it is leaving said die space near said orifices,

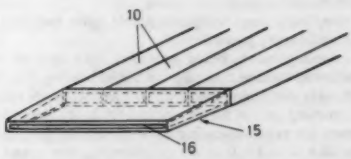
and feeding gas under superatmospheric pressure to and through said chambers and said orifices at supersonic rate such as to form shock waves at ultrasonic frequency by virtue of said resonating cavities, thereby to disintegrate said sheet of molten material at said focal region under laminar flow conditions and produce atomized particles of controlled particle size while circulating cooling fluid through the cooling chamber of each of said die elements.

4,485,835

NOZZLE FOR STRIP CASTING

Ernst Huber, Schaffhausen; Wolfhart Rieger, Buch, and Martin Bolliger, Sierre, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation of Ser. No. 7,446, Jan. 29, 1979, Pat. No. 4,290,477. This application Jul. 2, 1981, Ser. No. 280,553
Claims priority, application Switzerland, Jan. 30, 1978, 991/78
The portion of the term of this patent subsequent to Jun. 28, 2000, has been disclaimed.
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—430 **19 Claims**



1. An apparatus for the continuous casting of molten metal comprising in combination a caterpillar track type mold and a nozzle for feeding said molten metal to said mold, the improvement comprising:

a nozzle having a feed portion and a tip portion, said feed portion comprising a plurality of individually separable hollow elongated tubular sections, each of said sections having a peripheral wall defining at least one feed channel, said plurality of sections being mounted in side by side relationship such that a portion of said peripheral wall surface of one of said plurality of sections abuts a portion of said peripheral wall surface of another of said plurality of sections said tip portion located downstream of the feed portion and being of substantially the same width as the sum of the individual tubular sections.

4,485,836

STRAND GUIDE ROLLS MOUNTED COAXIALLY AND NEIGHBOURING ONE ANOTHER IN A CONTINUOUS CASTING INSTALLATION FOR CASTING STEEL SLABS

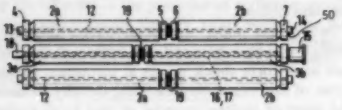
Hans Streubel, Erkrath, and Hans-Otto Thörner, Meerbusch, both of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag AG, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 249,015

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1980, 3013484

Int. Cl.³ B22D *11/00, 11/128*

U.S. Cl. 164—442 11 Claims



1. In a continuous slab casting installation comprising a continuous casting mold, an arrangement of coaxially neighboring, mutually independently supported slab strand guide rolls following said continuous casting mold and serving for supporting and guiding a cast steel strand slab with still liquid core moving in a predetermined direction of travel, and slab withdrawal rolls arranged after said slab strand guide rolls, the improvement of said arrangement of said slab strand guide rolls which comprises:

at least two non-driven cooled slab strand guide rolls for guiding and supporting a common cast strand slab and arranged substantially coaxially with respect to one another at the region of the path of travel of the continuously cast slab strand for guiding and supporting by means of each one of said at least two non-driven cooled slab strand guide rolls a fraction of the width of the cast slab strand and for counteracting the ferrostatic pressure in the cast slab strand;

each of said two slab strand guide rolls having bearing journals;

a coupling means for interconnecting two neighboring ones of said bearing journals of said two slab strand guide rolls with one another in order to positively rotatably entrain both of said two slab strand guide rolls so as to safeguard against any one of said two slab strand guide rolls from failing to rotate during throughpassage of the cast slab strand and to prevent resultant damage to any such non-rotating slab strand guide roll;

said coupling means being mountable upon said two neighboring bearing journals;

said coupling means being provided with at least one entrainment surface coacting with said bearing journals for rotatably entraining said two slab strand guide rolls; and

said coupling means further including flow communicating means for communicating flow of cooling medium from one slab strand roll to the neighboring slab strand roll.

4,485,837

SUPPORTING AND GUIDING ARC FOR A CAST STRAND

Horst Wiesinger; Günter Holleis; Werner Scheurecker, all of Linz, and Walter Antonitsch, Kematen, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Aug. 26, 1982, Ser. No. 411,693

Claims priority, application Austria, Sep. 17, 1981, 4016/81

Int. Cl.³ B22D *11/12*

U.S. Cl. 164—448 18 Claims

1. In a supporting and guiding arc for a cast strand, such as a strand having a slab cross section, including

an arc-inner roller way and an arc-outer roller way, each having rollers supporting said strand on opposite sides thereof,

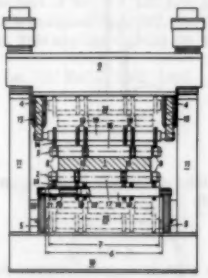
one-piece arcuate longitudinal carries extending over the total length of said supporting and guiding arc and accommodating said roller ways,

pairs of transverse carriers arranged opposite from one another and engaging said longitudinal-carriers from a side of said longitudinal carriers opposite said roller ways, and pairs of transverse carriers being arranged at distances from one another along said longitudinal carriers, and

drawing anchors connecting said opposite pairs of transverse carriers,

the improvement wherein each of said arc-inner roller way and said arc-outer roller way comprises:

only two one-piece arcuate longitudinal carriers arranged



laterally of the ends of said rollers at a distance larger than the longitudinal extension of said rollers,

a plurality of supporting segments, each of said supporting segments having a plurality of said strand supporting rollers mounted thereon, and

means for separately detachably fastening each of said supporting segments to the two longitudinal carriers of its respective roller way in a strand supporting position, any individual one of said segments upon detachment from its respective pair of longitudinal carriers being removable from said supporting and guiding arc by withdrawal away from its strand supporting position between said longitudinal carriers.

4,485,838

METHODS FOR MANUFACTURING LEAD FIBER AND RADIATION SHIELDING MATERIAL USING THE SAME

Hisataka Shoji, and Shigehiro Ouchi, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Feb. 24, 1983, Ser. No. 469,283

Int. Cl.³ B22D *11/01*

U.S. Cl. 164—462 3 Claims

1. In the method of manufacturing lead fibers of a mean diameter of less than 60 microns and a purity of more than 99% by melt spinning of molten lead through a spinneret having very small holes therein, the improvement comprising adding 50 to 500 ppm of tin to the molten lead prior to spinning.

4,485,839

RAPIDLY CAST ALLOY STRIP HAVING DISSIMILAR PORTIONS

Brian L. Ward, Woking, England, assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 199,149, Oct. 22, 1980, Pat. No. 4,409,296. This application Jan. 21, 1983, Ser. No. 459,854

Int. Cl.³ B22D *11/06*

U.S. Cl. 164—463 5 Claims

1. A method of casting metallic strip having a plurality of dissimilar portions metallurgically alloy-bonded along the longitudinal extent of said strip comprising the steps of:

delivering a first stream of molten metal from a nozzle of a first crucible onto a casting surface moving at a rate of

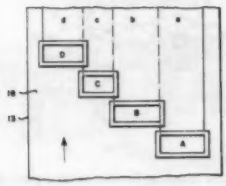
from 200 to 10,000 linear surface feet per minute past said nozzle, and

delivering at least one additional dissimilar stream of molten metal from a nozzle of a second crucible onto said casting surface such that a peripheral edge portion of said at least one additional stream contacts a peripheral edge portion of adjacent dissimilar metal to create a metallurgical alloy-bond therebetween during casting.

2. An apparatus for casting metallic strip having a plurality of dissimilar portions metallurgically alloy-bonded along the longitudinal extent of said strip comprising:

a continuously advancing casting surface;

a first crucible having an internal cavity for receiving and holding molten metal and a nozzle with an opening through which a first stream of molten metal is delivered from the cavity to the casting surface located within about 0.120 inch of the nozzle and movable past the nozzle at a speed of from 200 to 10,000 linear surface feet per minute;



at least one additional crucible having an internal cavity for receiving and holding molten metal and a nozzle with an opening through which at least one additional dissimilar stream of molten metal is delivered from the cavity to the casting surface disposed about 0.120 inch from the nozzle; and

said crucibles arranged on opposite sides of a longitudinal axis with respect to the casting surface in the direction of casting, such that at least one edge of the nozzle opening of the first crucible is disposed near the axis, and one edge of the nozzle opening of the additional crucible on the opposite side of the axis is disposed near the axis, such that a peripheral edge portion of said at least one additional stream contacts a peripheral edge portion of adjaent dissimilar metal to create a metallurgical alloy-bond therebetween during casting.

4,485,840

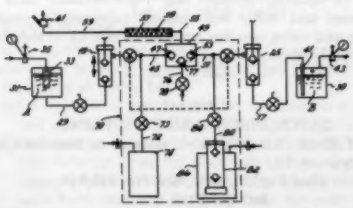
FLUSHING SYSTEM FOR A METER-MIX-DISPENSING DEVICE

Wayne F. Erwin, Hilliard, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed May 3, 1982, Ser. No. 373,872

Int. Cl.³ B08B *7/04;* **B05B** *15/02*

U.S. Cl. 137—240 **20 Claims**



1. A flushing system adapted to be connected with a mixing device, said mixing device having a mixing means, a first inlet line for conveying a first material to said mixing means and a second inlet line for conveying a second material to said mixing means for combination with said first material to form a mixed material, said first inlet line having a one-way valve disposed therealong, said flushing system including a cleaning fluid line communicating with said mixing means through said second inlet line, said cleaning fluid line conveying cleaning fluid into said mixing means for removing said first and second materials and said mixed material therefrom, and a solvent line connected to said first inlet line upstream of said one-way valve, said solvent line conveying a solvent material through said first inlet line, over said one-way valve and into said mixing means to clean said one-way valve from said first material and said mixed material.

4,485,841

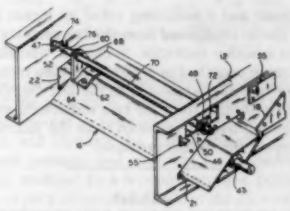
POLLUTION CONTROL DEVICE

Dennis L. Hixenbaugh, Pittsburgh, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed May 27, 1983, Ser. No. 498,797

Int. Cl.³ F16K *51/00*

U.S. Cl. 137—315 **10 Claims**



1. A damper assembly for use with the inlet duct of a pollution control system,

said damper assembly including first and second spaced apart support means,

a first plurality of spaced apart access openings formed in at least one of said support means, a plurality of elongate vane means extending in a generally parallel relation between said support means and each being in general alignment with one of said openings,

a plurality of first pivot means each removably mounted adjacent each opening and a releasably supporting one end of each vane means and second plurality of pivot means for releasably supporting the opposite end of each vane means on the other support means for pivotal movement of said vane means between a first position wherein said vane means inter-relate to substantially impede the flow of gas in said duct and a second open position,

each of the said openings aligned with each vane means being of sufficient size to permit said vane means to be slid therethrough,

and trolly means for supporting said vane means for axial sliding movement through said openings whereby said vane means may be individually removed and replaced,

and cover means releasably securable over each of said openings.

4,485,842

BALANCED PRESSURE VALVE

Georg Rausch, Lohr, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Fed. Rep. of Germany

Filed Feb. 15, 1983, Ser. No. 466,668

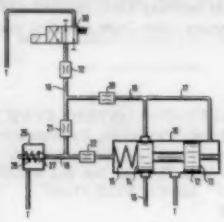
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3207080

Int. Cl.³ F16K *31/383;* **G05D** *16/00*

U.S. Cl. 137—489 **2 Claims**

1. Balanced pressure valve for the setting of a specified system pressure, comprising: a spring-loaded main piston, one face of which is acted upon directly, and the other, spring-

loaded face of which is acted upon via two restrictors, located one behind the other, by the system pressure; a servo valve having a spring-loaded operating element by which the space between the two restrictors can be connected with the exhaust when the system pressure exceeds the pressure set on the operating element, whereby, by means of the pressure differential acting on the main piston, the latter is displaced and a connection is established from a line carrying the system pressure to exhaust; and a switching valve by means of which a connection can be established from the line carrying the system pressure, via a further restrictor, to exhaust whereby the pressure valve can be switched over to pressureless circulation; the switching valve being connected to the line carrying the system pressure, upstream from the two restrictors, and a supply restrictor being provided upstream from the junction point in the line carrying the system pressure.



4,485,843

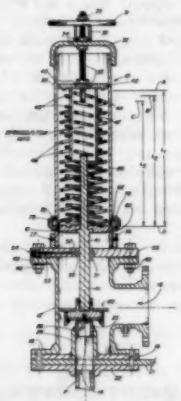
VARIABLE PRESSURE RELIEF AND CONTROL VALVE

Robert C. Wolff, 955 Crystal, New Orleans, La. 70124

Continuation-in-part of Ser. No. 260,849, May 5, 1981, abandoned, which is a continuation-in-part of Ser. No. 244,703, Mar. 17, 1981, abandoned, which is a continuation-in-part of Ser. No. 145,478, May 1, 1980, abandoned. This application Nov. 17, 1982, Ser. No. 442,294

Int. Cl.[3] **F16K** *15/02*

U.S. Cl. 137—514 **6 Claims**



4. An anti-chattering pressure relief valve to provide positive valve opening and closing of the type which includes a main body having a valve seat and valving member, and a bonnet housing a valve stem and spring means extending between a pressure plate and a bottom plate member operably positioned within the housing bonnet and attached to the valve stem for seating the valving member upon the seat, the invention comprising:

sear means independent of the spring means and carried by the housing bonnet for imparting a frictional retention to the base plate member at least prior to opening and prior to closing of the seat by the valving member.

4,485,844

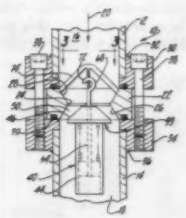
BACK PRESSURE INDUCER

Henry A. Vander Kaay, Ann Arbor, Mich., and Borje O. Rosaen, 4031 Thornoaks, Ann Arbor, Mich. 48104, assignors to Borje O. Rosaen and Rosedale Product, Inc., both of Ann Arbor, Mich.

Filed Apr. 23, 1982, Ser. No. 371,068

Int. Cl.[3] **F16K** *15/06, 17/04*

U.S. Cl. 137—515.7 **11 Claims**



1. A back pressure inducer for use with a pair of coaxial fluid conduits one fluid conduit having an internal bore which forms an inlet passageway and the other conduit having an internal bore which forms an output passageway, said back pressure inducer comprising:

a valve seat having a fluid port and a surface which flares outwardly from said port and towards the outlet passageway,

means for securing said valve seat in line between the inlet and outlet passageways so that said fluid port is fluidly connected between the inlet and outlet passageways,

a valve member having an outwardly flared surface, said valve member being movable between a closed position in which said valve member abuts against said valve seat and at least substantially closes said fluid port and an open position in which said valve member flared surface is spaced from said valve seat flared surface thus fluidly opening said ports,

at least a portion of said valve member being positioned within said other conduit, said valve member portion being spaced inwardly from said internal bore of said other conduit,

means for urging said valve member towards said closed position and

wherein said valve member comprises an enlarged head and wherein said valve seat and said valve member head are frusto-conical in shape, said valve seat and said valve member head being formed with different angles of inclination, the relationship of the angles being such that the area of opening between said valve member head and between said valve seat remains substantially constant along said valve member head when said valve member is in its fully open position.

4,485,845

QUICK DISCONNECT COUPLING

Kenneth T. Brady, Lincoln, Nebr., assignor to Imperial Clevite Inc., Glenview, Ill.

Filed Sep. 20, 1982, Ser. No. 419,919

Int. Cl.[3] **F16L** *37/28*

U.S. Cl. 137—614.04 **5 Claims**

1. A quick disconnect female coupling for coaction with a male coupling, the female coupling comprising:

an outer sleeve,

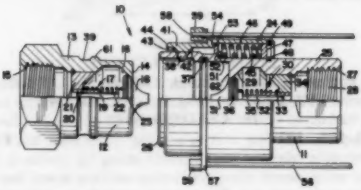
a generally tubular housing slidably mounted within said

sleeve and having an axially extending bore for receipt of said male coupling in one end thereof, the housing being movable axially with respect to the sleeve between partially uncoupled, coupled, and partially coupled positions,

a valve seat in said bore,

a valve slidably mounted within said bore and engageable with the valve seat for closing the bore,

first and second spring means which are coil springs encircling the housing each with first and second ends between the housing and the outer sleeve for resiliently biasing the housing toward the coupled position wherein second spring means encircles said first spring means, the first spring means providing a first restoring force when the housing is between the coupled and the partially coupled positions for urging the housing toward the coupled position, the first and second spring means providing a second restoring force on the housing when the housing is between the coupled and the partially uncoupled positions



for urging the housing toward the coupled position, the second restoring force being greater than the first restoring force, first stop means slidably mounted on the housing and engaging one end of the first spring for compressing the first spring, second stop means on the sleeve and engaging one end of the second spring for compressing the second spring, and third stop means engageable with the other ends of the first and second springs for compressing the first spring between the first and third stop means and for compressing the second spring between the second and third stop means, the first stop means being movable toward the third stop means when the housing moves from its uncoupled position to its partially coupled position whereby the first spring is compressed, the first stop means being engageable with the second stop means, and the third stop means being movable toward the first and second stop means when the housing moves from its coupled position to its partially uncoupled position whereby both the first and second springs are compressed.

4,485,846

FOUR-WAY VALVE WITH INTEGRAL FLOW CONTROLS, COMMON EXHAUST, AND CARTRIDGE TYPE PILOT VALVE

James A. Neff, Bloomfield Township, Oakland County, Mich., assignor to Mac Valves, Inc., Wixom, Mich.

Filed Feb. 24, 1982, Ser. No. 352,023
Int. Cl.³ F15B *13/043*
U.S. Cl. 137—625.64 **10 Claims**

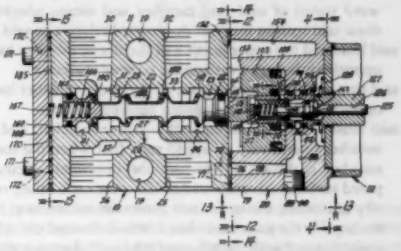
6. A cartridge type pilot air valve for operating the main valve spool in an air valve, characterized in that it includes:

(a) a pilot air valve body;

(b) a pilot valve piston movably mounted in a cylinder in said pilot air valve body, and having a front end and a rear end, and provided with an axial shaft which extends axially forward from the pilot valve piston front end and engages one end of the main valve spool, and having an axial bore extended inwardly from the rear end thereof and terminating adjacent the pilot valve piston front end;

(c) a pilot valve element retainer releasably seated in the pilot air valve body and having an inner end and an outer end, and with the inner end slidably mounted in the axial bore in said pilot valve piston, and said retainer having an axial bore that extends inwardly from the outer end thereof and terminates in a transverse wall;

(d) a pilot valve element movable mounted in the axial bore in the pilot valve element retainer and movable, by a spring mounted in the axial bore in said retainer, to a first operative position to block flow of pilot air to the pilot valve piston cylinder against the rear end of the pilot valve piston and allow exhaust of pilot air from the rear end of the pilot valve piston in said cylinder through



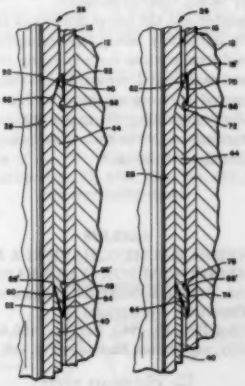
exhaust passageway means formed along the outer periphery of the pilot valve element and through the axial bore in said retainer and passages through the front end of said piston and through the piston chamber to an external exhaust passage, and movable by a solenoid armature pusher member to a second operative position to allow flow of pilot air to the rear end of the pilot valve piston, to move the piston and the axial shaft thereon, which in turn moves the main valve spool.

4,485,847

COMPRESSION SLEEVE TUBE REPAIR

Timothy H. Wentzell, South Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 21, 1983, Ser. No. 477,292
Int. Cl.³ F16L *55/12, 55/16*
U.S. Cl. 138—89 **11 Claims**



1. A device to be secured with a selected tube in a heat exchanger, the heat exchanger having a tube sheet and a plurality of tubes having open ends accessible from the lower surface of the tube sheet, said device comprising:

a generally cylindrical tension member having a central body portion, a stem portion at its lower end and an enlarged head portion at its upper end;

a generally cylindrical ring member concentrically disposed

about the lower end of said body portion, said ring member including means for cooperating with the tube sheet lower surface to limit the upward travel of the ring member relative to the tube sheet;

a generally cylindrical compression sleeve member surrounding said body portion between said head portion and said rig member, the upper and lower outer circumferential surfaces of the sleeve member being in the form of a flexible, integral rim defined by an external circumferential groove;

said stem portion mounting means for limiting the downward travel of said ring member and means adapted to draw said tension member downward relative to said ring;

said head and the upper portion of the sleeve member having oppositely facing, overlapping tapered surfaces;

said ring and the lower portion of the sleeve member having oppositely facing, overlapping tapered surfaces;

said tension member, compression sleeve member, and ring member operatively arranged such that when the tension member is drawn downward, the oppositely facing tapered surfaces advance wedge-like over each other, readially expanding the upper and lower circumferential outer surfaces at the ends said sleeve into deformed circumferential contact with the adjacent tube wall, forming respective upper and lower sals there against.

9. A tube repair assembly comprising:

a generally cylindrical tension member having a central body portion, a stem portion at its lower end, and a tapered head at its upper end;

a generally cylindrical rig member concentrically disposed about the lower end of said body portion;

a generally cylindrical compression sleeve member surrounding said body portion between said head portion and said ring member, the upper and lower outer circumferential surfaces of the sleeve member being in the form of a flexible, integral rim defined by an external circumferential groove;

wherein the head, sleeve member and ring member form a generally cylindrical assembly insertable within a tube, having substantially the same outer diameter as the tube inner diameter;

said head and the upper portion of the sleeve member having oppositely facing tapered surfaces;

said ring member and the lower portion of the sleeve member having oppositely facing tapered surfaces; and

means on said stem portion for advancing the ring member upward and said head downward such that the oppositely facing tapered surfaces advance wedge-like over each other, radially expanding the upper and lower circumferential outer surfaces at the ends of said sleeve, into sealing engagement against the tube.

4,485,848

TERRY WEAVING MACHINE HAVING A DEFLECTING MECHANISM FOR WARP YARNS

Franz Eisenlohr, Tuttwil, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Dec. 16, 1982, Ser. No. 450,437

Claims priority, application European Pat. Off., Jan. 13, 1982, 82 810010.7

Int. Cl.³ D03D *39/22*

U.S. Cl. 139—25 **10 Claims**

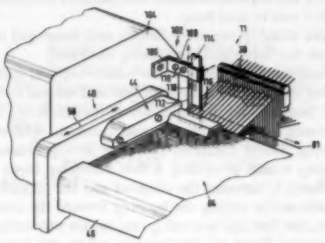
1. A terry weaving machine comprising

a reed for beating-up a weft yarn disposed within a shed of warp yarns at a beating-up station into a woven cloth;

a movable temple downstream of said reed for guiding the cloth from said beating-up station;

a movable breast beam downstream of said reed for guiding the cloth thereon; and

a stationary deflecting mechanism between said reed and said temple for narrowing the shed on opposite sides at



least on one edge thereof to maintain a tucked-in end of a weft yarn in the shed.

4,485,849

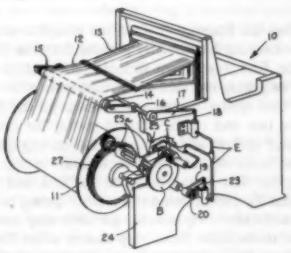
LOOM BEAM LET OFF

Bobby L. Franks, 3215 Howland, Anderson, S.C. 29646

Filed Jun. 14, 1982, Ser. No. 388,034

Int. Cl.³ D03D *49/08*

U.S. Cl. 139—107 **1 Claim**



1. A let off for a loom having a loom beam delivering warp yarn under tension for weaving and a beam gear comprising:

a pinion driven by said beam gear;

a brake disc driven by said pinion;

a pair of opposed brake pads engaging said disc;

springs continuously during weaving exerting an adjustable yielding force against said pads, urging each of said pads against said disc, and imparting an adjustable tension to the warp yarn being removed from the loom beam;

means, acting in response to changing warp conditions, adjusting the force of said springs and thereby adjusting the yielding force exerted against said pads;

a drive shaft extending between said pinion and said disc; and

a mounting bracket carrying said shaft adjacent said loom beam.

4,485,850

AUXILIARY DEVICE FOR WEFT INSERTION ON AN AIR JET LOOM

Kanji Tsuji, Ishikawa, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Japan

Filed Mar. 10, 1982, Ser. No. 356,638

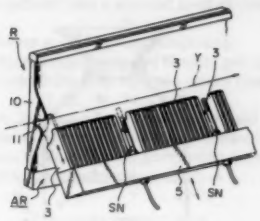
Claims priority, application Japan, Mar. 11, 1981, 56-034666[U]

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **3 Claims**

1. Auxiliary device for weft insertion on an air jet loom comprising a reed formed by an array of air guide elements

which are arranged in the direction of weft insertion and provided with generally U-shaped cutouts having front openings provided between upper and lower portions of said air guide elements for defining an air guide channel, an auxiliary reed formed by an array of auxiliary air guide elements which are arranged in said direction of weft insertion and located on the front side of said reed, said auxiliary air guide elements having



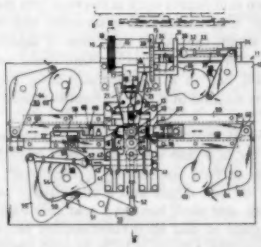
forward portions being directed towards said air guide channel, and means for reciprocating said auxiliary reed normal to said reed between an operating position closer to said air guide channel and a stand-by position so that said forward portions of said auxiliary air guide elements are brought adjacent said upper and lower portions of said air guide elements for temporarily covering said front opening of said cutouts in said air guide elements at least during said weft insertion.

4,485,851

APPARATUS FOR RAISING HOOKS OF SEMI-FINISHED SPRING PRODUCTS

Hiroshi Takumi, Neyagawa, Japan, assignor to Shinko Machinery Co., Ltd., Neyagawa, Japan

Filed Jul. 19, 1983, Ser. No. 515,148
Claims priority, application Japan, Feb. 22, 1983, 58-27893
Int. Cl.³ B21F *35/02*
U.S. Cl. 140—103 **6 Claims**



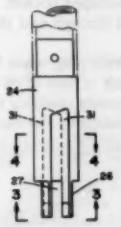
1. An apparatus for raising hooks of semi-finished spring products, which comprises a rocking arm arranged to be pivotally movable between an upper and a lower position, a pair of laterally extending semi-finished spring holding pieces at a forward end portion of said rocking arm for transferring the semi-finished springs manufactured by a spring manufacturing machine towards a hook raising section provided above a spring discharge opening formed in a table of said apparatus, a clamping unit for fixedly clamping the semi-finished spring holding pieces which have been transferred to said hook raising section, a rotational position control member which rotates the semi-finished spring held between said semi-finished spring holding pieces for positional control thereof, and a pair of slide members on which hook raising tools are mounted and which are adapted to freely advance towards or retreated from the hook raising section as desired.

4,485,852

APPARATUS AND METHOD FOR REMOVING SLACK IN WIRE FENCES

Harold L. Frazier, Rte. #2, Box 2343, Red Bluff, Calif. 96080

Filed Feb. 3, 1983, Ser. No. 463,611
Int. Cl.³ B21F *7/00*
U.S. Cl. 140—118 **11 Claims**



1. Apparatus for removing slack in a wire, including a retaining clip having a medial bail portion and a pair of leg members extending outwardly therefrom, a tool including a shank member, a first slot formed in one end of said shank member adapted for receiving and retaining a portion of the wire, a second slot formed in said one end of said shank member adapted for receiving and retaining said bail portion of said retaining clip closely spaced and generally aligned with said wire portion, means for selectively rotating said shank member about the axis thereof to impart bends in the wire and shorten the length thereof, and means for wrapping said leg members of said retaining clip about the wire adjacent to and outwardly of the bends formed therein to retain said bends and to relieve tension on said wire portion and said bends.

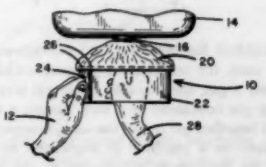
10. A method for removing slack in a tensioned wire, comprising the steps of providing a retaining clip having a medial bail portion and a pair of leg members extending from opposed ends thereof, providing a tool having a first slot for engaging and retaining the wire and a second slot for engaging and retaining the bail portion of the retaining clip, rotating the tool to impart multiple bends in the wire to shorten and remove slack therein, and thereafter winding the legs of the retaining clip about the wire adjacent to and outwardly of the bends formed therein to retain the bends therein and provide stress relief thereof.

4,485,853

OIL CHANGE METHOD

Curtis R. Gunderson, 9916 - 199th St., Lakeville, Minn. 55044

Continuation of Ser. No. 460,404, Mar. 29, 1983,. This application Feb. 22, 1984, Ser. No. 582,305
Int. Cl.³ B67C *9/00*
U.S. Cl. 141—1 **2 Claims**



1. A method of removing used oil from a machine having an oil reservoir with a drain hole normally sealed by a drain plug, comprising the steps of:

(a) initially loosening said drain plug with a tool to the point where further removal can be accomplished by use of an operator's fingers;

(b) positioning beneath said drain plug a collection assembly, said collection assembly including:

(1) a generally rigid frame member having an endless band defining upper and lower open ends; and

(2) a flexible, oil-impervious, sheet sealingly secured to an outer perimeter of said frame member proximate said upper open end and fitted within said frame member to form a concave-shaped pocket;

(c) reaching upward through said sheet to grasp said drain plug; and

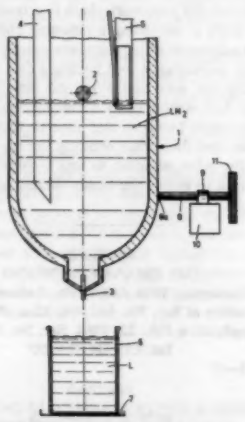
(d) removing said drain plug while holding said collection assembly in the path of flow of oil exiting said drain hole, said collection assembly shielding the fingers of the operator from contamination by the used oil.

4,485,854

METHOD AND DEVICE FOR INJECTING A LIQUEFIED PRESSURIZING GAS INTO CONTAINERS

Alain Roullet, Villejuif, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, France

Filed Aug. 18, 1983, Ser. No. 524,392
Claims priority, application France, Sep. 13, 1982, 82 15450
Int. Cl.³ B65B *31/02*
U.S. Cl. 141—4 **14 Claims**



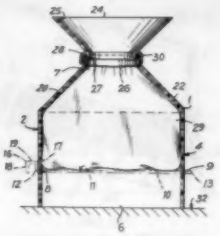
1. In a method for injecting into containers, for example cylindrical cans, for receiving a product which does not of itself give off a gas, for example a mineral water, a liquefied pressurizing gas contained in a tank having a nozzle for the flow of said liquefied gas out of the tank, comprising arranging the containers on a machine in alignment on a given line, conveying the containers, subsequent to the filling thereof, along said given line of alignment vertically under said tank so that each container receives an amount of said liquefied gas which is proportional to a travel effected thereby vertically under said nozzle; the improvement comprising varying the relative position between said line of alignment and said nozzle so as to vary the amount of liquefied gas received by each container when it passes vertically under said nozzle.

4,485,855

BAG FILLING KIT

Julia E. Dillingham, 503 W. Whitaker Mill Rd., Raleigh, N.C. 27608

Continuation of Ser. No. 376,918, May 10, 1982, abandoned.
This application Feb. 23, 1984, Ser. No. 583,017
Int. Cl.³ B65B *39/06*
U.S. Cl. 141—316 **4 Claims**



1. A bag filling kit, comprising

a hollow stand having side walls and spaced opposite first and second open ends, the second end of the stand tapering down to a stand neck smaller than the first end;

a funnel having side walls, spaced opposite first and second open ends, a funnel neck at said second end and clamping means at said funnel neck, the side walls tapering down from the first end to the second end, said clamping means comprising a coaxial collar integral with and spaced from and around said funnel neck and concentric with said funnel neck, said funnel neck having dimensions small enough to fit into said stand neck and said collar having dimensions large enough to fit over said stand neck whereby said collar is spaced from said funnel neck by an annular gap having a radial thickness and releasably clamps the neck of a flexible bag to the outside of said stand neck with the remainder of the bag in said stand, said neck of said bag being bent over the outside of said stand neck whereby said bag is fillable with material via said funnel when said funnel neck is inserted into the open neck of said bag, said funnel being separate and independent from said stand, the radial thickness of said annular gap being sufficient to accommodate said stand neck and said neck of said bag in a substantially snug fit, said stand having slots formed in a pair of opposite ones of said side walls; and

a shelf removably insertable into said stand via said slots and supported by said side walls, said shelf having a substantially planar surface bounded by a front edge, a rear edge and a pair of side edges and a trough-like pull member formed with said shelf having a rear side extending from said front edge of said shelf substantially perpendicularly thereto including a front side in spaced parallel relation with said rear side and a top side in spaced parallel relation with said planar surface of said shelf and joining said front and rear sides.

4,485,856

APPARATUS FOR ACCURATELY FILLING BEVERAGE CANS

Robert J. Dulian, Chicago; David M. Kemp, Naperville; Hartl R. Jones, Bensenville, all of Ill., and Raymond J. Conway, Mountain View, Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 29, 1982, Ser. No. 362,868
Int. Cl.³ B65B *57/00*
U.S. Cl. 141—198 **1 Claim**

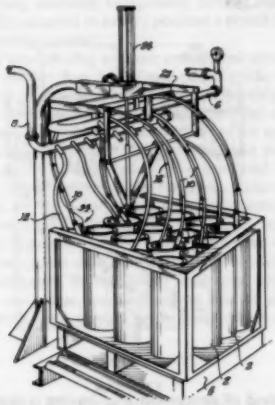
1. In a system for the filling of a pressurized beverage container including a source of gas at a selected positive pressure and a source of beverage liquid at a pressure greater than the gas pressure, flexible conduits respectively connected to the

source of gas and to the source of liquid and to fluid tight fittings on said container to supply gas and liquid separately thereto, each said gas and said liquid conduit being provided with respective gas and liquid valves operative to open when connected to the fittings of the container, with the container being initially connected to the gas conduit to effect gas pressurization, and thereafter to the higher pressure liquid conduit to effect filling of the container, and a sensing device in said gas conduit to determine when beverage liquid is present in said gas conduit to indicate that a selected level of container fill is achieved,

the improvement in said system comprising:

a housing connected between said flexible gas conduit and a said fluid tight fitting, and having a pair of communicating bores,

one said bore forming a further portion of said gas conduit and the other said bore containing the means for detecting the presence of liquid in said gas conduit notwithstanding positive gas pressure therein;



said detecting means comprising a light emitter and a light receiving photoconductor; means in the path of said light emitter for refracting the light therefrom and directing it to the photoconductor providing an electrical signal to maintain open the liquid valve controlling the flow of liquid in said conduit connected to the source of liquid, thereby to admit liquid to said container;

said refracting means having two angular refracting faces facing said gas conduit bore with said refracting faces thereof normally immersed in the pressurized gas in said gas conduit bore;

said liquid being supplied through said liquid conduit to the container against the gas positive pressure therein until the gas is displaced therefrom and both said faces of said refracting means in the gas conduit bore are sufficiently immersed in the liquid thereby reducing refraction of the light and the electrical signal produced by the photoconductor thereby to effect closing of the valve in the liquid conduit and thus discontinue flow of liquid to the container.

4,485,857

DOOR PROCESSING MACHINE

Bruce D. Norlie, Durham, and Charles A. Knighten, Chico, both of Calif., assignors to Norfield Manufacturing Co., Chico, Calif.

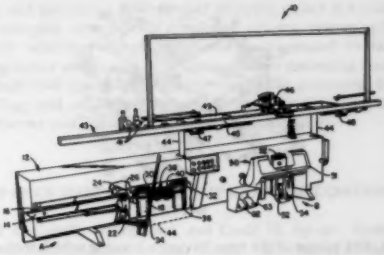
Filed Jan. 3, 1983, Ser. No. 455,436
Int. Cl.³ B27C *9/04, 3/02*
U.S. Cl. 144—3 R **20 Claims**

16. A door preparation machine for drilling a lock bore, a latch hole and for forming a face plate mortise in a door, comprising:

a support frame for supporting the door during preparation;

a lock drill and a latch drill mounted to the support frame, the lock and latch drills each including a hydraulic motor for operating the said lock drill and said latch drill;

electrically operated router means mounted to the support frame;



pump means coupled to the hydraulic motors of the lock and latch for providing fluid pressure to operate said hydraulic motors; and

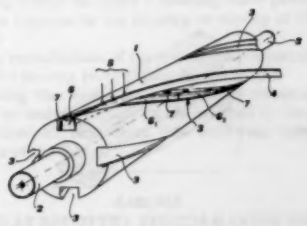
control means operably coupled to the lock drill, the latch drill, and the router means, for moving the lock drill, the latch drill, and the router in a predetermined sequence into and out of engagement with said door for drilling said lock bore and said latch hole and for forming the face plate mortise therein.

4,485,858

CUTTER ARBOR HAVING HELICOIDAL CUTTERS FOR WOOD PLANING MACHINES

Gianfranco Cecchi, Via Ressi, 34/A, 20125 Milano, Italy

Filed Apr. 5, 1983, Ser. No. 482,290
Int. Cl.³ B27G *13/00*
U.S. Cl. 144—221 **3 Claims**



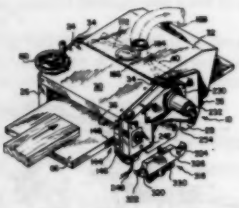
1. In a cutter arbor for wood planing machines, comprising a cylindrical arbor having helicoidal slots in its cylindrical surface and cutters removably disposed in said slots; the improvement in which said cutters are continuous flexible cutters which in their undeformed condition are uniplanar and of constant cross-sectional configuration throughout their length and are bowed so that they have a convex longitudinal edge and a parallel concave longitudinal edge, said convex edge being a cutting edge.

4,485,859

PLANER CHIP REMOVAL SYSTEM

James D. Krogstad, Russellville, and Thomas J. Wulff, Holts Summit, both of Mo., assignors to Shopsmith, Inc., Dayton, Ohio

Filed Aug. 16, 1982, Ser. No. 408,533
Int. Cl.³ B27C 1/14
U.S. Cl. 144—252 R 2 Claims



1. In a planer of the type having a housing which includes an interior chamber, a motor-driven blade member rotatably mounted on said housing and extending transversely of said interior chamber, a chip shield having an arcuate contour and extending transversely of said interior chamber adjacent an upstream side of said blade member and including a transverse trailing edge such that said chip shield curves about a portion of a periphery of said blade member, and a table positioned below said blade member, the improvement comprising:

a chip removal hood mounted on said housing and including a leading transverse edge immediately adjacent and coextensive with said trailing edge of said chip shield, and exhaust nozzle adapted to receive a vacuum cleaner hose, and wall means converging toward said nozzle and forming a concavity opening toward a downstream side of said blade member; and

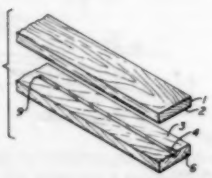
said housing having a pair of opposing side walls and a lid member rotatably attached thereto, said lid member having an opening through which said exhaust nozzle extends.

4,485,860

FORMING A CYLINDRICALLY SHAPED HOLE IN A LAMINATED WOODEN BEAM

Kenneth J. Avilla, Santa Rosa, Calif., assignor to Standard Structures, Inc., Windsor, Calif.

Filed Feb. 28, 1983, Ser. No. 470,224
Int. Cl.³ B27D 1/00
U.S. Cl. 144—350 8 Claims



1. A process for forming a cylindrically shaped hole in a laminated wooden beam comprised of two or more individual wooden members comprising:

A. selecting the location of the cylindrically shaped hole prior to laminating the individual wooden members;

B. forming a pilot bore in one of the wooden member established by the desired location of the cylindrically shaped hole, said pilot bore being characterized as having a cross-sectional area smaller than the cross-sectional area of the cylindrically shaped hole;

C. laminating said individual wooden members such that said pilot bore is located proximate the interface of adjacent individual wooden members at the location determined by the to-be-formed cylindrically shaped hole; and

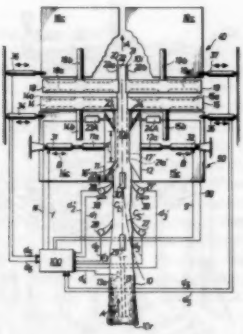
D. forming the cylindrically shaped hole by guiding a drill bit in a path established by the pilot bore.

4,485,861

METHOD AND APPARATUS FOR PROCESSING LOGS HAVING A NONUNIFORM PROFILE

Philip Nilsson, deceased, late of Söderhamm (by Margaretha Nilsson, legal representative); Urban Eklund, Söderhamm, and Jan-Erik Gasslander, Garpenberg, all of Sweden, assignors to Kockums Industri AB, Soderham, Sweden

Filed Apr. 5, 1982, Ser. No. 365,547
Int. Cl.³ B27B 1/00; B27L 11/00
U.S. Cl. 144—357 18 Claims



1. A method of processing logs having a diameter which generally increases toward their root end and which are fed with their narrower, top end through a timber processing installation having a flat reducing section including a pair of reducing disks which are independently adjustable toward or away from a center line, and a sawing section including at least two laterally adjustable saw blades positioned on opposite sides of said center line, said saw blades being adapted to form at least one plank on each side of said logs after they have been processed by said reducing section, said method comprising:

measuring the profile of said log with respect to a reference line;

determining a minimum acceptable plank thickness, length and width;

calculating from said profile measurements the available plank thickness, length and width corresponding to the thickness, length and width, respectively, of the portions of said log which would be removed by said reducing disk in their current positions;

comparing said available plank thickness, length and width with said minimum acceptable thickness, length and width, respectively, for each side of said log;

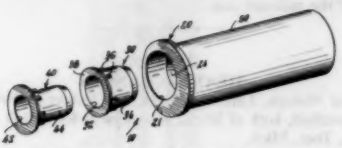
generating an actuating signal for removing a disk away from said center line by at least said minimum acceptable plank thickness when said available plank thickness, length and width on the same side of said log as the reducing disk to be moved is larger than said minimum acceptable plank thickness, length and width, respectively; and

releasing said signal when the respective log passes through said flat reducing section, thereby maximizing the yield from said log and minimizing the saw mill waste.

4,485,862
PENCIL SHARPENER

Harley H. Mattheis, Verona, and Agha M. A. Khan, Jersey City, both of N.J., assignors to Risdon Corporation, Naugatuck, Conn.

Filed Sep. 2, 1982, Ser. No. 413,997
Int. Cl.³ B43L *23/00*
U.S. Cl. 145—3.1 **5 Claims**



1. A cosmetic pencil sharpener adapted to sharpen pencils of a plurality of sizes, comprising:

a point cutting assembly comprising cutting means and a pencil guide adapted to axially position a pencil for cutting by said cutting means;

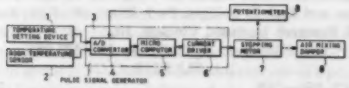
an adaptor sleeve having an inner cylindrical surface with a diameter smaller than that of said pencil guide and at one end having an outside configuration releasably engaging the inner surface of said guide, and at the other end having a flange and means adjacent to said flange for spacing said flange from said point cutting assembly to permit easy grasping and removal of said sleeve from said guide; and

a cuttings holder means for catching and holding cuttings produced by sharpening a pencil, said cuttings holder means comprising a tube having a generally square cross section with gently rounded corners and sides and further having one closed end and one open end, said open end being configured to releasably hold said point cutting assembly such that the longitudinal axis of said tube is parallel with but eccentric to the longitudinal axis of said guide.

4,485,863
CONTROL DEVICE FOR CAR-MOUNTED AIR-CONDITIONER

Yukio Yoshida; Akira Tanaka; Ryutaro Fukumoto; Ryosaku Akimoto; Shigetoshi Tanaka, and Nobuaki Ito, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Churyo Engineering Co., Ltd.

Filed Dec. 2, 1981, Ser. No. 326,590
Claims priority, application Japan, Dec. 12, 1980, 55-175307
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—42 **1 Claim**

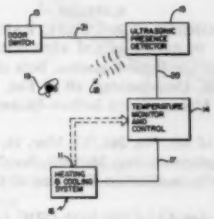


1. A control device for a car-mounted air-conditioner of the air-mixing type including a first device for setting a temperature for a space and for providing a signal representing the set temperature, and a second device for sensing the actual space temperature and for providing a signal representing the actual space temperature, said air-conditioner including an air-mixing damper for receiving cool air and for selectively directing a portion of the cool air over a heater, said control device including a pulse signal generator arranged to receive the signals of each of said first and second devices and to obtain the deviation of the actual space temperature sensed by said second device from the temperature set by said first device, said pulse signal generator including an A/D converter for converting the signals from said first and second devices into digital signals, a microcomputer connected to said A/D converter for receiving the digital signals and for effecting a PID operation (proportional integration-differentiation operation) and determining the necessary displacement of said air-mixing damper and for transmitting a multi-phase signal based on the necessary displacement, a current driver in communication with said microcomputer for amplifying the multi-phase signals, and a stepping motor controlled by the amplified multi-phase signals and connected to said air-mixing damper for intermittently driving said air-mixing damper, said stepping motor is a four-phase, two-pole type having a unipolar driving system with monofilar windings and a potentiometer connected to said stepping motor and to said A/D converter for providing feedback from said stepping motor to said A/D converter for controlling said air-mixing damper so that the deviation between the set and actual temperatures becomes zero.

4,485,864
OCCUPANCY RESPONSIVE TEMPERATURE CONTROL SYSTEM

Edward A. Carrell, Georgetown, and David H. Spivey, Austin, both of Tex., assignors to Flair-Emsco Corporation, Hauppauge, N.Y.

Filed Jan. 14, 1981, Ser. No. 225,101
Int. Cl.³ G05D *23/00*; H01H *3/16*
U.S. Cl. 165—11 R **5 Claims**



1. A method of operating a system for modifying the temperature of an enclosed space which has at least one access portal, the system being of the type having means for changing the temperature of the air in the space and means responsive to the temperature within the space for producing a command signal to cause heat to be supplied to or withdrawn from the space when the temperature therein departs from a control range, the method comprising the steps of

detecting the opening and closing of the access portal;

producing within the space a standing wave pattern of energy in response to the opening or closing of the access portal;

detecting perturbations of the standing wave pattern indicative of a moving body within the space; and

deactivating the means for producing a command signal when no such perturbations are detected by the end of a predetermined interval of time following opening and closing of the portal.

4,485,865
WASTE HEAT RECOVERY SYSTEM HAVING THERMAL SLEEVE SUPPORT FOR HEAT PIPE

Jack McCurley, Dallas, Tex., assignor to Q-dot Corporation, Garland, Tex.

Division of Ser. No. 165,059, Jul. 1, 1980, Pat. No. 4,426,959.
This application Mar. 4, 1982, Ser. No. 354,744
Int. Cl.³ F28D *15/00*; F28F *9/10*
U.S. Cl. 165—76 **8 Claims**

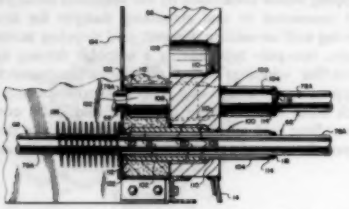
1. Heat transfer apparatus comprising, in combination:

a header plate having a heat pipe opening reduced by a stepped bore;

a support sleeve projecting through the heat pipe opening

and coupled in sealed engagement with the stepped bore; and

a heat pipe projecting through the support sleeve and coupled in sealed engagement with the support sleeve, the outside diameter of the heat pipe being smaller than the inside diameter of the support sleeve whereby the heat



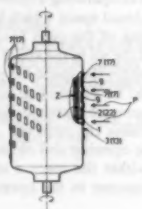
pipe and support sleeve are separated by an annular air gap, and the support sleeve having swaged end portions engaging the heat pipe on opposite sides of said header plate, one of said swaged end portions being sealed against the heat pipe in a fluid-tight union at a point remote from the union of the support sleeve and stepped bore.

4,485,866

HEAT ABSORBER STRUCTURE, PARTICULARLY A PLASMA BEAM ABSORBER

Johann Hemmerich; Peter Kupschus, both of Juelich, and Helmut Fraenkle, Unterhaching, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 243,763, Mar. 16, 1981, abandoned.
This application Aug. 26, 1983, Ser. No. 526,780
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1980, 3011282
Int. Cl.³ F28F *5/02*; G21C *1/01*
U.S. Cl. 165—90 **2 Claims**



2. A heat absorber structure for receiving radiated heat from a selected direction on an outer wall thereof, comprising:

an inner wall of good heat conductive material having a common outer surface with a plurality of spaced apart web portions each with an outer surface in said common outer surface and with coolant channels formed between said web portions;

an outer wall of good heat conducting material overlying said inner wall and secured to at least some of said outer surfaces of said web portions and having a plurality of bulge portions formed therebetween in locations overlying the coolant channels, said outer wall being an electrodeposited wall, and thinner than said inner wall, said bulge portions extending at spaced locations along the length of said outer wall overlying said channels;

said web portions comprising streamlined double tapered securing bodies extending transversely to a flow direction of coolant in said channels, said securing bodies being arranged in adjacent rows with securing bodies of one row staggered with respect to securing bodies of an adjacent row and with the upstream and downstream ends of said streamline double tapered securing bodies extending into channel areas between said adjacent rows, said bulges disposed between adjacent securing bodies in each row; said inner and outer walls being cylindrical; and

means mounting said inner and secured outer walls for rotation for rotating said outer wall past said selected direction of the radiated heat.

4,485,867

HEAT EXCHANGER

William Melnyk, Lathrup Village, and Robert P. Fries, West Bloomfield, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Feb. 8, 1982, Ser. No. 346,665
Int. Cl.³ F28F *9/02, 9/04, 9/14, 9/16*
U.S. Cl. 165—173 **3 Claims**

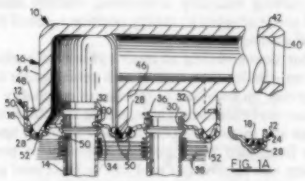


FIG. 1A

1. A heat exchanger comprising a header having a peripheral wall, a plurality of rows of tubes, means for securing said header to the ends of each of said tubes, a groove formed in said header adjacent the peripheral wall thereof and intermediate adjacent rows of tubes, a recessed portion formed along the full length of the centerline of said groove, a tank having walls formed so as to be aligned with and mounted in said groove within said peripheral wall and intermediate adjacent rows of tubes, a chamfer formed along each of the inner and outer edges of said tank wall providing a blunt edge at the ends of the chamfers, and a gasket mounted in said groove and deformed along its centerline into said recessed portion and compressed therein by said blunt edge, and means for retaining said tank in position within said peripheral wall.

4,485,868

METHOD FOR RECOVERY OF VISCOUS HYDROCARBONS BY ELECTROMAGNETIC HEATING IN SITU

Guggilam C. Sresty; Harsh Dev; Richard H. Snow, all of Chicago, and Jack E. Bridges, Park Ridge, all of Ill., assignors to IIT Research Institute, Chicago, Ill.

Filed Sep. 29, 1982, Ser. No. 428,081
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—248 **22 Claims**

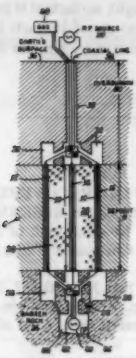
1. A method for recovering liquid hydrocarbons from an earth formation containing viscous hydrocarbonaceous liquid and water in an inorganic matrix, said formation being substantially impermeable to fluids under native conditions, said method comprising:

substantially uniformly heating a block of said earth formation with electromagnetic power to a temperature at which said viscous hydrocarbonaceous liquid is relatively fluid and a portion of said water vaporizes to water vapor at a pressure sufficient to overcome the capillary pressure of said liquid in said matrix,

recovering water vapor thereupon escaping from said block under said pressure and hydrocarbonaceous liquid driven thereby, and

controlling the magnitude of said electromagnetic power to

limit the current recovery ratio of water vapor to hydrocarbonaceous liquid below a predetermined limit assuring



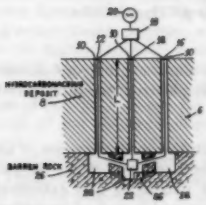
substantial recovery of said hydrocarbonaceous liquid prior to the driving off of substantially all said water.

4,485,869

RECOVERY OF LIQUID HYDROCARBONS FROM OIL SHALE BY ELECTROMAGNETIC HEATING IN SITU

Guggilam C. Sresty; Richard H. Snow, both of Chicago, and Jack E. Bridges, Park Ridge, all of Ill., assignors to IIT Research Institute, Chicago, Ill.

Filed Oct. 22, 1982, Ser. No. 435,979
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—248 **14 Claims**



1. A method for recovering liquid hydrocarbons from an oil shale formation containing kerogen in an inorganic matrix, said formation being substantially impermeable to fluids under native conditions, said method comprising:

substantially uniformly heating a block of said oil shale formation in situ with electromagnetic power to a temperature of about 275° C. where there is pyrolysis of a portion of said kerogen to gas and shale oil at a pressure sufficient to overcome the capillary pressure of said shale oil in said matrix, thereby providing substantial fluid permeability to said formation,

utilizing said pressurized gas to drive at least portions of said gas and shale oil from said block,

recovering said gas thereupon escaping from said block under said pressure and said shale oil driven by said gas, thereby further increasing the fluid permeability of said formation, and

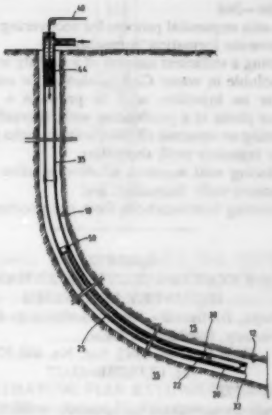
controlling the magnitude of said electromagnetic power to raise the temperature of said block relatively slowly to increase the rate of pyrolysis of said kerogen as the permeability of said formation increases to produce gas at pressures above that necessary to overcome said capillary pressure and below that at which there is substantial escape of said gas bypassing shale oil within the formation rather than driving said oil before it.

4,485,870

METHOD AND APPARATUS FOR CONDUCTING WIRELINE OPERATIONS IN A BOREHOLE

James J. Walulik, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jan. 24, 1983, Ser. No. 460,340
Int. Cl.³ E21B *23/08, 43/11, 47/00*
U.S. Cl. 166—250 **6 Claims**



1. Apparatus for use in conjunction with pipe such as drill pipe for logging or perforating earth formations surrounding a borehole, comprising:

(a) a hollow length of stinger tubing having upper and lower ends and an outside diameter smaller than the inside diameter of the intended drill pipe,

(b) first docking means on the upper end of said stinger tubing adapted for receiving a locomotive thereon,

(c) second docking means mounted on the lower end of said stinger tubing adapted for receiving and coupling a locomotive thereto through said stinger tubing, and for making at least one electrical connection therewith,

(d) means for attaching a wireline tool to the lower end of said second docking means,

(e) releasable latching means, mounted at least in part on said docking means, for cooperatively latching said second docking means to a length of adjacent drill pipe when said second docking means is not coupled to a locomotive, and for releasing said second docking means from such drill pipe when coupled to a locomotive,

(f) a first locomotive having a seal portion with an effective outside diameter substantially equal to the inside diameter of the intended drill pipe and adapted for engaging said first docking means,

(g) a second locomotive including means for moving with and being propelled at least in part by said first locomotive, and being movable beneath and independently of said first locomotive, and having a seal portion with an effective outside diameter substantially equal to the inside diameter of said stinger tubing and adapted for pulling a logging cable through the drill pipe, through said first locomotive, and through said tubing, and for coupling to said second docking means, and

(h) means below said first docking means for sealing the outside of said stinger tubing movably to the inside of the drill pipe, such that fluid pumped into the drill pipe will propel both locomotives so as to substantially pull the stinger out from the bottom of the drill pipe without

buckling said stinger, and retrieval of a cable attached to said second locomotive will retract said stinger back into the drill pipe substantially without buckling said stinger.

4,485,871

IN-SITU PROCESS FOR RECOVERING HYDROCARBONS FROM A DIATOMITE-TYPE FORMATION

Bruce W. Davis, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 9, 1983, Ser. No. 473,510

Int. Cl.³ E21B *43/22, 43/24, 43/40*

U.S. Cl. 166—266 **20 Claims**

1. An in-situ sequential process for recovering hydrocarbons from a diatomite formation comprising:

(a) injecting a sufficient amount of a slightly soluble in water or insoluble in water C_4–C_{10} alcohol or mixture of alcohols at an injection well to produce a hydrocarbon-alcohol phase at a production well; thereafter,

(b) injecting an aqueous alkaline solution into said formation at said injection well; thereafter,

(c) displacing said aqueous alkaline solution towards said production well; thereafter, and

(d) recovering hydrocarbons from the production well.

4,485,872

SULFONE COSURFACTANTS IN ENHANCED OIL RECOVERY PROCESSES

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 10, 1982, Ser. No. 448,872

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—273 **18 Claims**

1. An aqueous surfactant composition consisting of:

(a) sodium chloride;

(b) a hydrocarbon sulfonate surfactant having an equivalent weight of from about 225 to about 600; and

(c) at least one sulfone cosurfactant selected from the group represented by the formula:

wherein Q is a linear or branched alkylene group, the sulfone having a minimum of 2 carbon atoms and a maximum of 14 carbon atoms; and wherein said sodium chloride is present in an amount from 0.01–10 parts by weight, said surfactant is present in an amount from 0.15–15 parts by weight and said sulfone cosurfactant is present in an amount from 0.05–15 parts by weight.

13. A process for recovery of hydrocarbon from a substerranean formation comprising injecting an aqueous surfactant system consisting essentially of NaCl, a hydrocarbon sulfonate surfactant having an equivalent weight from 225 to 600 and at least one sulfone cosurfactant selected from the group represented by the formula:

wherein Q is a linear or branched alkylene group, the sulfone having a minimum of 2 carbon atoms and a maximum of 14 carbon atoms; and

into said formation via at least one injection well and thereby causing the so-injected system to mobilize and move oil from the injection well towards one or more production wells, and wherein said NaCl is present in an amount from 0.01–10 parts by weight, surfactant is present in an amount of from about 0.15 to about 15 parts by weight and said cosurfactant is present in an amount from about 0.05–15 parts by weight.

4,485,873

PROCESS FOR OIL RECOVERY FROM A SUBTERRANEAN RESERVOIR

Dieter Balzer, and Kurt Kosswig, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels, A.G., Marl, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 300,427, Sep. 9, 1981,. This application Sep. 1, 1982, Ser. No. 413,908

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1981, 3134530

The portion of the term of this patent subsequent to Jul. 3, 2001, has been disclaimed.

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—274 **12 Claims**

1. A process for recovering extensively emulsion-free crude oil from a subterranean deposit of medium or high salinity, comprising injecting into an injection well therein, a tenside solution or dispersion in formation water comprising 0.1–20 wt% of a mixture of 0–90 wt % of ethoxylates of the formula:

$$R—(OCH_2CH_2)_nOH$$

and 100–10 wt % of carboxymethylated ethoxylates of the formula:

$$R—(OCH_2CH_2)_n—OCH_2—COOM$$

wherein

R is a hydrocarbon aliphatic group of 4–20 carbon atoms or a mono- or dialkylphenyl group of 1–14 carbon atoms in the alkyl group,

n is 1–30, and

M is an alkali or alkaline earth metal ion or ammonium,

wherein the tenside is selected so that the phase inversion temperature and recovering said extensively emulsion-free crude oil from said deposit of the system: crude oil/-formation water/tenside, lies 0°–10° C. above the deposit temperature.

4,485,874

METHOD FOR SCALE REMOVAL AND SCALE INHIBITION IN A WELL PENETRATING A SUBTERRANEAN FORMATION

Kevin O. Meyers, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

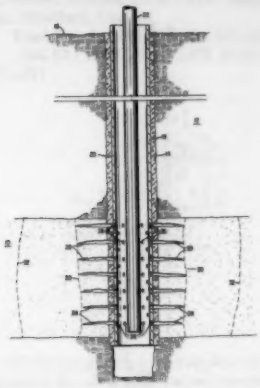
Filed Oct. 14, 1983, Ser. No. 542,249

Int. Cl.³ E21B *43/27, 43/28*

U.S. Cl. 166—279 **11 Claims**

1. In a method for removing scale and inhibiting the formation of scale in a well penetrating a subterranean formation for the production of fluids from said formation, said method including; cleaning said well by injecting an aqueous solution of a suitable mineral acid into said well in an amount and for a time effective to remove scale from said well and thereafter injecting a scale inhibitor into said formation about said well through said well so that said scale inhibitor is thereafter slowly released from said formation to inhibit the formation of

scale, an improvement comprising: injecting an aqueous solution of a chelating agent into said well in an amount and for a



time effective to remove precipitates of multi-valent cations and said scale inhibitor.

4,485,875

PROCESS FOR SELECTIVELY PLUGGING PERMEABLE ZONES IN A SUBTERRANEAN FORMATION

David O. Falk, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Feb. 28, 1983, Ser. No. 470,751
Int. Cl.³ E02D *3/12*; E21B *33/138*
U.S. Cl. 166—295 **19 Claims**

1. A process for selectively plugging highly permeable zones of a subterranean formation comprising the steps of:

(a) injecting an acrylamide polymer, a phenol and an aldehyde into the highly permeable zones via a well in fluid communication with said zones, wherein the moles of said phenol exceed the equivalents of unhydrolyzed acrylamide groups of said polymer and the equivalents of aldehyde groups of said aldehyde exceed the moles of said phenol; and

(b) reacting said acrylamide polymer, phenol and aldehyde in situ at a temperature of from about 50° C. to about 100° C. and at a pH of from about 7 to about 12 for a time of from about 1 day to about 10 days to produce a polymer resin which substantially plugs said highly permeable zones.

4,485,876

VALVING APPARATUS FOR DOWNHOLE TOOLS

David J. Speller, Houston, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Sep. 26, 1983, Ser. No. 535,405
Int. Cl.³ E21B *34/10*
U.S. Cl. 166—373 **19 Claims**

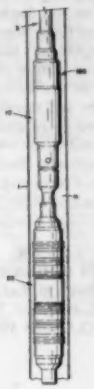
1. The method of controlling fluid pressure on and flow to downhole tool means in a well having a low fluid level and consequently low hydrostatic pressure in the casing annulus, comprising the steps of:

(1) positioning a conduit closure member, supporting the hydrostatic pressure of fluid in the conduit, above a downhole tool means and above shiftable valve means having a biased normal position providing a pressure equalizing fluid passage between the bore of the downhole tool and the casing annulus;

(2) bypassing conduit fluid around the conduit closure member, so that conduit fluid acts against the bias of the shiftable valve means;

(3) increasing the conduit fluid pressure to shift the shiftable valve means against the bias to a second position, wherein the conduit fluid and fluid pressure are transmitted to the downhole tool; and

(4) reducing the conduit fluid pressure to normal hydrostatic



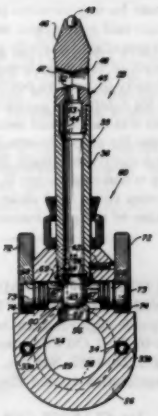
fluid pressure, thereby permitting said shiftable valve means to return to said normal position and equalize pressure in the conduit bore and the casing annulus and to stop flow down the fluid conduit.

4,485,877

WALL PENETRATING FIRE EXTINGUISHING DEVICE

Stewart G. McMillan; Robert W. Steingass, and Clyde H. McMillan, all of Valparaiso, Ind., assignors to Fire Task Force Innovations, Inc., Valparaiso, Ind.

Filed Jun. 21, 1982, Ser. No. 390,750
Int. Cl.³ A62C *31/22*
U.S. Cl. 169—48 **17 Claims**



1. In combination with a fire hose nozzle assembly adapted to extinguish exposed fires and having an elongated, hollow, nozzle body having inlet and outlet ends and a channel therethrough extending between said ends, said channel providing a flow path for the passage of a fire extinguishing agent through said nozzle body, and a shut-off valve assembly connected to said nozzle body and operable to shut-off flow through said nozzle, the improvement of an elongated, tubular, penetration member having a distal end and a proximal end carried by said nozzle body, the interior of said penetration member providing

a flow passage for said fire extinguishing agent, at least one discharge port in said penetration member adjacent to said distal end, one end of said flow passage being connected to said channel in said nozzle body and the opposite end of said flow passage being connected to said discharge port, the distal end of said penetration member being constructed and arranged to facilitate forced penetration of said penetration member through a barrier, such as a wall or the like, and valve means for controlling the flow of fire extinguishing agent through said flow passage, whereby said nozzle assembly may be operated either in a first mode as an attack nozzle to extinguish exposed fires or in a second mode wherein fire extinguishing agent is discharged through said discharge port to extinguish fires on the opposite side of or in said barrier or wall to extinguish hidden fires, or simultaneously in both modes.

4,485,878

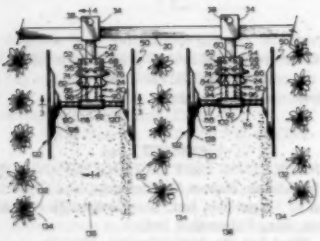
SHIELD UNIT FOR CULTIVATORS

Harvey J. Uken, Rte. 2, Box 195, Lake Lillian, Minn. 56253

Filed Sep. 30, 1982, Ser. No. 431,023

Int. Cl.³ A01B *39/26*

U.S. Cl. 172—510 **12 Claims**



1. A shield unit for row crop cultivation comprising a pair of laterally spaced disks, curved arm means, a shaft adjacent one end of said arm means having portions projecting in opposite lateral directions from said arm means, one of said disks being rotatably carried on one of said laterally projecting portions of said shaft and the other of said disks being rotatably carried on the other of said laterally projecting portions of said shaft so as to mount said disks for rotation in parallel planes about an axis perpendicular to said arm means, and means adjacent the other end of said arm means for pivotally attaching the other end of said arm means to a cultivator shank having a sweep at its lower end, whereby when said sweep is cultivating a strip of soil between two crop rows, said disks travel between said rows and at both sides of the path traversed by said sweep.

4,485,879

DOWNHOLE MOTOR AND METHOD FOR DIRECTIONAL DRILLING OF BOREHOLES

Anthony W. Kamp, and Robijn Feenstra, both of Rijswijk, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 28, 1983, Ser. No. 518,270

Claims priority, application United Kingdom, Aug. 25, 1982, 8224338

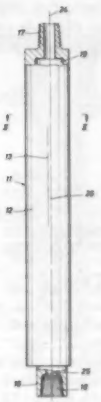
Int. Cl.³ E21B *7/04*

U.S. Cl. 175—61 **2 Claims**

1. Method for directional drilling of boreholes in subsurface formations, by means of a downhole motor connected into a drill string near the lower end thereof, said method comprising the steps of:

(a) connecting a drill bit to the output shaft of a downhole motor and lowering the downhole motor/drill bit assembly in the borehole at the end of a drill string,

(b) actuating the downhole motor to rotate the drill bit and applying a predetermined weight on bit, said weight being an amount sufficient to cause the normally-straight axis of the downhole motor to be curved along its longitudinal length, and



(c) simultaneously with step (b) rotating the drill string over periods that are preceded and followed by selected periods during which the drill string is not rotated.

4,485,880

DIRECT DRIVE FOR DEEP-WELL DRILLING

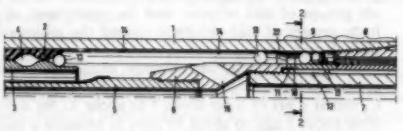
Friedhelm Makohl, Hermansburg, Fed. Rep. of Germany, assignor to Norton Christensen, Inc., Salt Lake City, Utah

Filed Aug. 1, 1983, Ser. No. 519,296

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1982, 3233980

Int. Cl.³ F03B *13/02*; E21B *4/02*

U.S. Cl. 175—107 **9 Claims**



1. A direct drive for a deep-well drilling bit comprising:

a motor section including helically coiled rotor, stator and chambers of predetermined width formed in between the rotor and stator and operable on the Moineau displacement principle,

drive shaft means connecting the rotor to the deep-well drilling bit,

an outer tube coaxially surrounding the drive shaft means and connected to the stator, and

locking means for coupling and locking the drive shaft means to the outer tube downstream of the motor section including

first detent means on the drive shaft including an axis of rotation,

second detent means on the outer tube, and a throw-in member which can be inserted from above the motor section, must pass through one of the chambers, and received between and couple the detent means together and having

a diameter which at most amounts to the width of the chambers formed between the rotor and stator and can pass axially through a chamber to the detent means on relative rotation of rotor and stator.

4,485,881

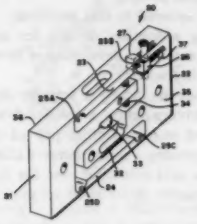
SHIFT ADJUSTMENT FOR A LOAD CELL

Herbert Tramposch, Riverside; Glen J. Randmer, Norwalk, and Walter E. Miller, Milford, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 9, 1983, Ser. No. 530,556

Int. Cl.³ G01G *3/14, 3/08, 21/08*

U.S. Cl. 177—211 **23 Claims**



1. A load cell for measuring forces applied thereto including an adjusting means for off center load adjustment comprising a substantially parallelogram structure having a moving section on one side and a fixed section on the opposite side; upper and lower strips extending between and connecting said sections; flexjoints located at approximately the juncture of each of said strips and said sections, said flexjoints adapted to flex in response to the force exerted thereon and facilitate transmission of the force to a transducer positioned on said load cell; and an adjusting means for off center load adjustment positioned on said load cell and including both a vertical and horizontal adjusting mechanism that are adapted to alter the position of a first flexjoint located adjacent the adjusting mechanism relative to the position of a second flexjoint.

4,485,882

ENGINE COMPARTMENT FOR AUTOMOBILES

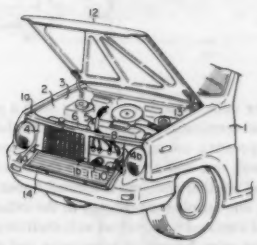
Masayuki Ide, and Satoshi Suzuki, both of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1982, Ser. No. 399,311

Claims priority, application Japan, Jul. 18, 1981, 56-107137[U]

Int. Cl.³ B62D *25/10*

U.S. Cl. 180—68.6 **7 Claims**



1. An engine compartment for automobiles, comprising an engine compartment housing an engine and a radiator disposed in front of said engine, said engine compartment having upper and front opening parts therein, an upper covering means pivotally connected at the rear end thereof to the automobile body, said upper covering means having a closed position for covering said upper opening part and an open position for opening said upper opening part, and a front covering means, pivotally connected to said automobile body, said front covering means having a closed position for covering said front opening part and an open position for opening said front opening part, said radiator being offset from the center of said engine in the transverse direction of the automobile such that access to the engine through said front opening part is unobstructed from the front of the automobile.

4,485,883

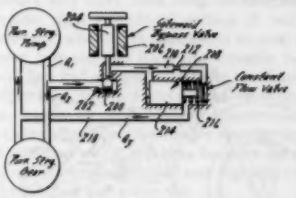
POWER STEERING SYSTEM WITH VEHICLE SPEED-SENSITIVE FLOW

James J. Duffy, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1982, Ser. No. 429,417

Int. Cl.³ B62D *5/08*

U.S. Cl. 180—142 **5 Claims**



1. A power steering gear system for an automotive vehicle comprising a power steering pump and a fluid pressure operated steering gear;

passages connecting the pump and the steering gear including branch passage portions extending from the high pressure side of said pump to the low pressure side thereof;

a bypass valve means in said branch portions for opening and blocking bypass flow therethrough; and

a constant flow valve means in said branch portions for regulating the flow bypassed from said high pressure side to said low pressure side whereby a constant volume of fluid delivered by said pump is bypassed to said low pressure side when said bypass valve means is open.

4,485,884

REAR COWLING MOUNTING STRUCTURE AND FENDER FOR MOTORCYCLE

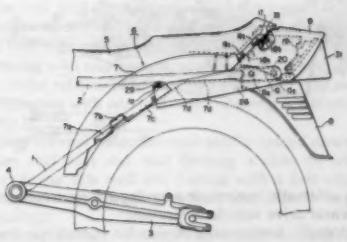
Hirofumi Fukunaga, and Kouji Shiratsuchi, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1982, Ser. No. 414,727

Claims priority, application Japan, Sep. 3, 1981, 56-130331[U]; Sep. 3, 1981, 56-130332[U]

Int. Cl.³ B62D *21/12*

U.S. Cl. 180—219 **8 Claims**



1. A rear cowling mounting structure for the body of a motorcycle or the like comprising; a rear fender having side walls, engaging pieces integral with said side walls of said rear fender, a rear cowling having an inner wall, and engaging ribs integral with the inner wall of said rear cowling, said engaging

pieces being engaged with said ribs to fixedly secure said rear cowling to the body of said motorcycle.

4,485,885

REAR SUSPENSION SYSTEM FOR TWO-WHEELED VEHICLES

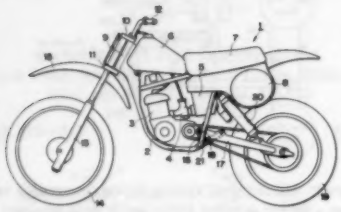
Kiyoshi Fukuchi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1982, Ser. No. 450,469

Claims priority, application Japan, Dec. 23, 1981, 56-214767; Jan. 12, 1982, 57-3001; Jan. 14, 1982, 57-4262; Jan. 14, 1982, 57-4263; Jul. 23, 1982, 57-129215; Jul. 26, 1982, 57-130169

Int. Cl.[3] **B62K** *25/20*

U.S. Cl. 180—227 **18 Claims**



1. In a two-wheeled vehicle having a body frame and a rear wheel, a rear suspension system comprising:

a rear fork member;

said rear fork member having a front portion thereof pivotably connected to said body frame and a rear portion thereof rotatably supporting said rear wheel;

a ring-like elastic band member stretched between said rear fork member and said body frame; and

said band member comprising a plurality of spring bands at least one of which has a relatively different spring constant, said spring bands being disposed substantially in parallel with each other.

4,485,886

AUTOMATIC TRANSMISSION FOR A FOUR-WHEEL DRIVE VEHICLE

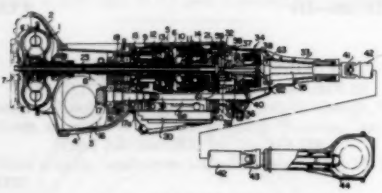
Toshio Takano, Hamuramachi, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1982, Ser. No. 435,790

Claims priority, application Japan, Oct. 27, 1981, 56-172526

Int. Cl.[3] **B60K** *23/08*

U.S. Cl. 180—247 **4 Claims**



1. An automatic transmission having a torque converter for a four-wheel drive vehicle comprising:

an automatic transmission device for operatively transmitting the output of an engine to driving wheels of the vehicle;

a pump driving shaft operatively connected to said torque converter and extending inside a turbine shaft to an axial end of the automatic transmission device;

means comprising an oil pump provided at the end of said automatic transmission device and operatively connected to an end of said pump drive shaft for supplying pressure oil to the transmission device;

a driving pinion operatively connected to an output gear of said automatic transmission device for transmitting the output thereof to a final reduction device of a pair of the driving wheels;

a partition adjacent to said oil pump and secured to the end of said automatic transmission device to close the automatic transmission device;

an extension case secured to said partition;

means comprising a transfer device for transmitting the output of said automatic transmission device to another pair of the driving wheels;

said transfer device including a transfer drive shaft connected to said driving pinion, a transfer driven shaft operatively connected to said another pair of driving wheels, and means comprising a fluid operated clutch adjacent to said partition in said extension case for operatively connecting said transfer drive shaft to said transfer driven shaft; and

means comprising a pressure oil control device mounted on said partition, said pressure oil control device including passages passing through said partition and valve means connected so as to supply the pressure oil from said oil pump to said fluid operated clutch through said valve means.

4,485,887

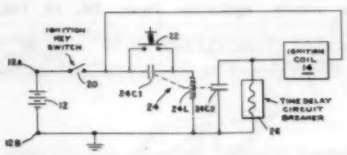
VEHICULAR ANTI-THEFT DEVICE

Michael W. Morano, 1471 Bay Ridge Pkwy., Brooklyn, N.Y. 11228

Filed Oct. 31, 1983, Ser. No. 547,125

Int. Cl.[3] **B60R** *25/00, 25/04*

U.S. Cl. 180—287 **2 Claims**



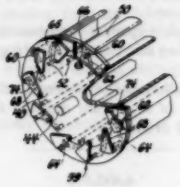
1. In a motor vehicle having a battery with a pair of terminals, one of said terminals being grounded and the other being a source of operating current, an ignition system having an ignition coil with one end connected to the other terminal of said battery and another end, and a normally open ignition key switch having one terminal connected to the other terminal of the battery and a second terminal, an anti-theft device comprising a relay, said relay having an energizing coil and first normally open and second normally open contact sets, means for connecting one of said contact sets and said energizing coil in series between the other terminal of the ignition key switch and the grounded terminal of said battery, a normally-open push button spring-biased second switch having pair of normally open contacts, said second switch being concealed in the motor vehicle, means for connecting said second switch in parallel with the first contact set of said relay in order to temporarily energize said relay and to close said first and second contact sets, means for connecting the second contact set of said relay between the other end of the ignition coil and the grounded terminal of said battery.

4,485,888

VEHICLE ENGINE COOLING APPARATUS

Mason K. Yu, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 10, 1983, Ser. No. 503,069
Int. Cl.³ B60H *1/06*; F01P *5/06*
U.S. Cl. 180—297 **3 Claims**



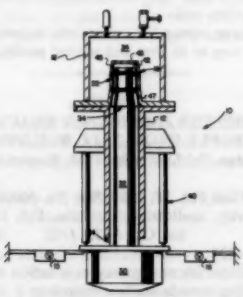
1. In an automotive vehicle, a vehicle body having a forward compartment, a hood for said compartment providing a low and streamlined hood line, an internal combustion engine for powering said vehicle transversely mounted in said forward compartment, a heat exchanger operatively connected to the engine mounted in said compartment, a cage type engine cooling fan mounted in parallel relationship to said engine, said cooling fan comprising a rotatable input drive shaft parallel to said engine, a pair of laterally spaced side plates drivingly secured to said input drive shaft, a plurality of variable pitch air pumping fan blades extending between said side plates and disposed radially outwardly of said input drive shaft, pivot means mounting said blades to said side plates, actuator means for turning said blades on associated axes extending through said pivot means thereby varying the pitch of said blades, and air directing shroud means disposed around said fan having a first opening therein for supplying inlet air thereto and having an outlet opening therein for discharging air from said fan, and mechanical drive means for drivingly connecting said engine to said input drive shaft of said fan for the rotational drive of said fan by said engine.

4,485,889

VALVE MEANS FOR COMPRESSED AIR POWERED ACOUSTIC PULSE GENERATOR

Marvin G. Bays, Ponca City, Okla., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 4, 1982, Ser. No. 336,530
Int. Cl.³ G01V *1/147*
U.S. Cl. 181—121 **4 Claims**



1. In an acoustic signal generator wherein compressed air is utilized to accelerate an impact projectile into a rigid target, a quick release air valve comprising:

(a) a fixed outer valve member having a straight, circular bore, of decreasing diameter, the smaller end of which is closed, said bore comprising first and second frusto-conical spaced apart valve seats, situated respectively adjacent its closed and open ends, the lower base of said first valve seat being interconnected with the upper base of said second valve seat by an intermediate right cylindrical bore surface penetrated by an air pressure port;

(b) a source of compressed air operatively interconnected with said air pressure port; and

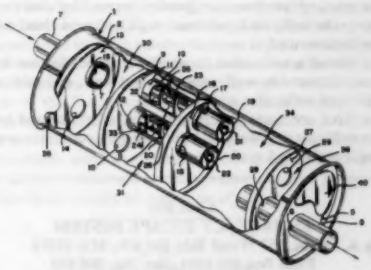
(c) a movable inner valve member rigidly attached to said projectile and adapted to fit axially within the bore of said fixed valve member, said movable valve member being provided with first and second frusto-conical spaced apart valve faces adapted to be guided into complementary sealing engagement with said first and second valve seats respectively, said valve faces being interconnected by an intermediate right cylindrical surface of said movable valve member, whereby in response to an axial separating movement between said fixed and movable valve members, said first and second valve faces are simultaneously disengaged from said first and second valve seats respectively so that the air pressure exerted continuously against said cylindrical surface of said valve member through said ports is admitted within said bore between the closed end thereof and the adjacent end of said movable valve member so as to drive said projectile.

4,485,890

ENGINE EXHAUST MUFFLER

Theodore R. Harris, 14 El Patio, Orinda, Calif. 94563, and Richard T. Harris, 3127 Stanley Boulevard, Lafayette, Calif. 94549

Filed Jun. 30, 1983, Ser. No. 509,992
Int. Cl.³ F01N *1/12*
U.S. Cl. 181—280 **11 Claims**



1. An internal combustion engine muffler comprising:

a. an elongated housing having a curvilinear side wall, an inlet end wall formd with a first inlet opening, and an outlet end wall formed with a first outlet opening;

b. an inlet tube connected to said inlet end wall and communicating with said first inlet opening in said inlet end wall;

c. an outlet tube connected to said outlet end wall and communicating with said first outlet opening in said outlet end wall;

d. a first internal reflection wall axially spaced downstream from said inlet end wall forming a close fit with said curvilinear side wall and formed with a first edge echo opening therethrough and first and second large tube openings;

e. a second internal reflection wall spaced between said inlet end wall and said first internal reflection wall forming a close fit with said curvilinear side wall and formed with a second edge echo opening therethrough and a second inlet tube opening;

f. said inlet tube communicates with said second inlet tube opening in said second internal reflection wall and is connected to said second internal reflection wall;

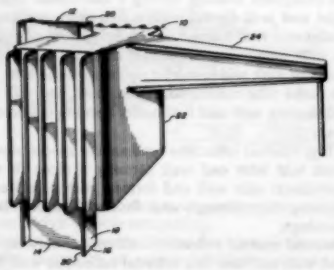
g. a bulkhead wall axially spaced downstream from said first internal reflection wall forming a close fit with said curvilinear side wall and formed with third and fourth large tube openings axially aligned with said first and second large tube openings in said first internal reflection wall;
h. first and second elongated internal large tube members connected to and extending from said first internal reflection wall to said bulkhead wall and communicating with said large tube openings in said first internal reflection wall and said bulkhead, and connected to said bulkhead wall;
i. first and second inner small tube members coaxially mounted within said first and second large tubes forming first and second open ended pulse chambers;
j. first and second elongated helical members joining said first and second inner small tubes and said first and second internal large tube members;
k. a third internal reflection wall axially spaced downstream from said bulkhead wall forming a close fit with said curvilinear side wall and formed with a third edge echo opening therethrough and a second outlet tube opening formed in alignment with said first outlet opening in said outlet end wall;
l. said outlet tube is in communication with said second outlet tube opening in said third internal reflection wall, and is connected to said third internal reflection wall;
m. a primary expansion chamber formed by said curvilinear side wall, said second internal reflection wall and said first internal reflection wall;
n. a primary acceleration expansion chamber formed by said curvilinear side wall, said first internal reflection wall and said bulkhead wall;
o. first and second elongated swirl and pulse smooting chambers formed between said first and second inner small tubes and said internal large tubes and divided by said helical members;
p. a primary interference chamber formed by said curvilinear side wall, said bulkhead wall and said third internal reflection wall;
q. a second acceleration expansion chamber formed by said curvilinear side wall, said inlet end wall, and said second internal reflection wall; and
r. a third acceleration expansion chamber formed by said curvilinear side wall, said third internal reflection wall and said outlet end wall.

4,485,891

EMERGENCY ESCAPE SYSTEM

Philip A. Friess, 857 Wheel Rd., Bel Air, Md. 21014

Filed Sep. 25, 1981, Ser. No. 305,602
Int. Cl.³ A62B *1/02*
U.S. Cl. 182—9 **4 Claims**



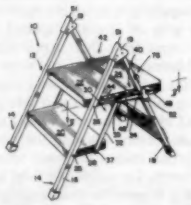
1. A personnel escape system for exiting a high fixed structure, comprising in combination with a rail extending over a fixed vertical distance along said structure, a personnel lowering member adapted to clamp onto said rail for controlled descent thereof at a predetermined maximum rate of descent, said member including
(a) a housing containing a clamping mechanism which is adapted to permit said housing to be attached for movement along one surface of said rail,
(b) a knurled roller in rolling contact with said one surface,
(c) a drum driven by and rotatable with said roller, where said drum is enclosed within a viscous fluid and mounted in said housing, and
(d) means to attach a harness arrangement to said housing capable of holding said personnel during descent from the structure,
whereby such controlled rate of descent is achieved by limiting the rate of rotation of said drum through the action of said viscous fluid on said drum.

4,485,892

PLATFORM STOOL

Kevin Maloney, and Charles E. Schroer, both of Columbus, Ind., assignors to Cosco, Inc., Columbus, Ind.

Filed Jul. 26, 1983, Ser. No. 517,458
Int. Cl.³ E06C *1/383, 1/387*
U.S. Cl. 182—161 **12 Claims**



1. A platform stool comprising
a pair of collapsible frame assemblies, each frame assembly including a front leg and a rear leg hingedly coupled to each other, the frame assemblies being laterally spaced apart to receive elevated steps therebetween,
a lower elevated step journaled for pivotal movement to each of the front legs,
an upper elevated step supported between the frame assemblies, the upper elevated step having a first position above the lower elevated step and a second position alongside the lower elevated step to form a platform therewith,
first linkage means for collapsibly supporting the lower elevated step, and
second linkage means for collapsibly supporting the upper elevated step in its first and second positions.

4,485,893

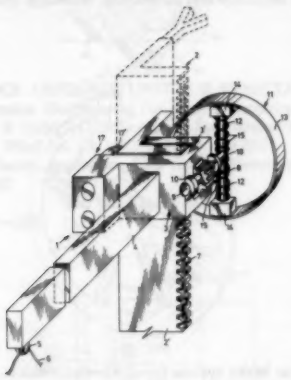
APPARATUS FOR EMERGENCY EVACUATION OF PEOPLE FROM TALL BUILDINGS

Nestor R. Fontan, Del Libertador 4854, Buenos Aires, Argentina 1426

Filed Feb. 15, 1983, Ser. No. 466,635
Claims priority, application Argentina, Feb. 23, 1982, 288522
Int. Cl.³ A62B *1/02*
U.S. Cl. 182—234 **5 Claims**

1. An apparatus for emergency evacuation of persons from buildings having outside walls comprising:
a guide column in the shape of an L-beam attached to the outside wall of the building and extending substantially vertically from a position adjacent ground level to a height sufficient to be reached by any persons occupying the building at the highest level, one outer leg of the L-beam extending substantially parallel to said outside wall in spaced relationship thereto to provide an open

channel between said outside wall and said parallel extending leg, for substantially the full length of the L-beam;
a gear rack on the outer edge of said parallel extending leg remote from the other leg of the L-beam;
a carriage removably mountable onto said guide column for sliding relationship thereon comprising;
a substantially U-shaped member having two spaced parallel legs connected at one end by a web and open at the other end to provide a slot between said parallel legs having a width slightly greater than the horizontal cross-section thickness of said outer leg of said guide column to slidably receive said outer leg therein,
a shaft rotatably mounted on said carriage with its axis of rotation extending substantially perpendicular to said parallel legs,
a pinion gear fixedly mounted on said shaft for rotation



therewith and operatively engageable with said rack when said carriage is mounted on said guide column,
a descent speed centrifugal governor operatively connected to said shaft and disposed partly in said channel,
a user support beam member extending from said U-shaped member in a direction substantially oppositely from said channel when said carriage is mounted on said guide column having an outer end remote from said outer wall of the building,
means adjacent the outer end of said support beam for removably attaching a person to the beam, and
a releasable retaining means on said U-shaped member for operatively slidably engaging the edge of said parallel leg on said L-beam opposite said gear rack to retain said U-shaped member on said L-beam with said pinion gear engaging said rack when said carriage is mounted on said guide column.

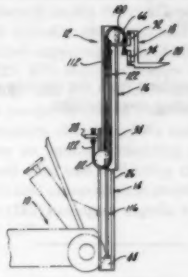
4,485,894

LIFT TRUCK MAST AND CARRIAGE ASSEMBLY

Eugene A. Soule; William L. Taylor, and Robert H. Walker, all of Jackson, Mich., assignors to The Knickerbocker Company, Jackson, Mich.

Filed May 24, 1982, Ser. No. 381,064
Int. Cl.³ B66B *9/20*
U.S. Cl. 187—9 E **7 Claims**

1. In a power-up and power-down mast and carriage assembly for a lift truck of the type having a stationary mast section fixed to the truck, a movable inner mast section reciprocable within the stationary mast, a fork carriage movably associated with the inner mast section, a double-acting hydraulic ram having an extensible and retractable cylinder and piston rod assembly operatively connected between said mast sections for extending and retracting the inner mast section relative to the stationary mast section, first sheave means rotatably mounted adjacent the upper end of said inner mast section for bodily movement therewith, power-up chain means trained over said first sheave means and having one end attached to said fork carriage and the other end attached to said stationary mast, second sheave means rotatably mounted on said inner mast section adjacent the lower end thereof for bodily movement therewith, power-down chain means trained under said second sheave means and having one end attached to said fork carriage and the other end attached to said stationary mast, whereby said power-up and power-down chain means are respectively powered and nonpowered in the power-up mode, and vice-versa, the improvement comprising first lost-motion coupling means interconnecting said power-up chain means with said stationary mast and said carriage, and second lost-motion coupling means interconnecting said power-down



chain means with said stationary mast and said carriage, said first and second lost-motion coupling means each having spaced stop means operable to positively limit lost-motion travel of the associated said lost-motion coupling means to a predetermined distance, and biasing means operably connected to said lost-motion coupling means for yieldably biasing said chain means so as to exert tension thereon in a direction opposite to the load forces imposed on said chain means by said ram, said predetermined travel distance being equal to the sum of the travel of the lost-motion coupling of the powered chain means during initial application of ram-applied forces thereto plus the maximum elongation of the powered chain means under maximum rated load whereby the non-powered chain means is always maintained in taut condition in both power-up and power-down modes of operation of said mast.

4,485,895

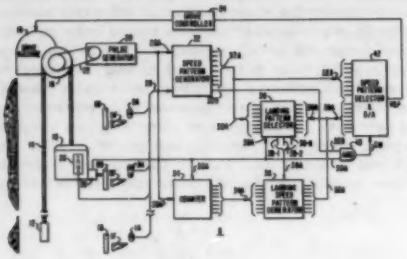
ELEVATOR SYSTEM

Kanzo Tachino, and Ryuichi Kajiyama, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1983, Ser. No. 509,117
Claims priority, application Japan, Jul. 21, 1982, 57-127047
Int. Cl.³ B66B *1/30*
U.S. Cl. 187—29 R **5 Claims**

1. An elevator system having an elevator car mounted in a building to serve the floors therein, comprising:
speed pattern means for providing a running speed pattern for the elevator car when it makes a run, with said running speed pattern including a slowdown portion which is activated when the elevator car is to stop at a predetermined target floor,
landing speed pattern means having memory means for storing a plurality of selectable landing speed patterns having different initial magnitudes,
detector means for providing a predetermined signal when the elevator car reaches a predetermined landing zone distance from a target floor,
selector means responsive to the magnitude of the slowdown portion of the running speed pattern when the detector means provides the predetermined signal, for selecting a

landing speed pattern of the landing speed generator means in response to the magnitude of the slow-down pattern,



and means for switching from the running speed pattern to the selected landing speed pattern.

4,485,896

MULTI-DISC BRAKE

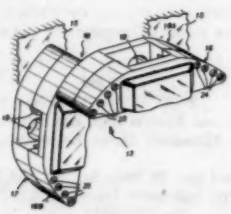
Gino Villata, Buttigliera D'Asti, Italy, and Jean Herbulot, Franconville, France, assignors to Valeo, Paris, France

Filed Aug. 10, 1982, Ser. No. 406,986

Claims priority, application France, Aug. 27, 1981, 81 16350

Int. Cl.³ F16D *55/42*

U.S. Cl. 188—72.5 **4 Claims**



1. A multiple disc brake comprising a frame, at least two axially spaced rotary discs, and a yoke comprising two intermediate blocks and two outer blocks, the two intermediate blocks being disposed axially between said rotary discs and including piston and cylinder means for applying friction linings against the inner surfaces of the respective rotary discs, said intermediate blocks being circumferentially staggered and arranged within an angular section of approximately 180°, and the two outer blocks being disposed on the axially outer sides of said discs and including piston and cylinder means for applying other friction linings against the outer surfaces of the respective rotary discs, said outer blocks being in circumferential registration with the respective intermediate blocks, all of the blocks being of substantially identical configuration, and fixing means common to all the blocks fixing them to said frame.

4,485,897

DISC BRAKE SYSTEM

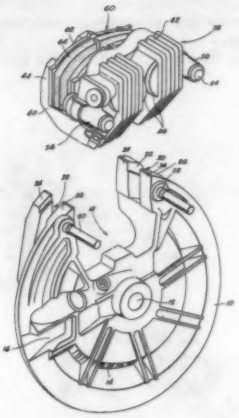
Takeshi Kawaguchi, Saitama, and Masayuki Seki, Nagano, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1982, Ser. No. 410,336

Claims priority, application Japan, Sep. 11, 1981, 56-134263[U]; Sep. 14, 1981, 56-135438[U]; Sep. 14, 1981, 56-135439[U]

Int. Cl.³ F16D *55/224*

U.S. Cl. 188—73.39 **9 Claims**



1. A disc brake system for a wheeled vehicle, including a brake disc fixed to rotate with a wheel of the vehicle, a caliper assembly support bracket fixed to the vehicle and having a mounting socket with opposed mounting faces perpendicular to the braking surfaces of said brake disc, and a caliper assembly having opposed brake pads for braking engagement with said brake disc, said caliper assembly being fixed to said caliper assembly support bracket within said mounting socket, wherein the improvement comprises

each of said opposed brake pad extends to each of said opposed mounting faces for sliding engagement therewith, the dimension of the interface of each said pad and each said opposed mounting surface being a length greater than the width of the braking surfaces of said brake disc, said greater length extending inward from the outer radial edge of the braking surface of said disc.

4,485,898

BRAKE PAD FOR REDUCING BRAKE NOISE

William J. Bracken, Livonia, and Johnny K. Sakioka, Jr., Belleville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/01367, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982, PCT Pub. No. WO84/01412, PCT Pub. Date Apr. 12, 1984

PCT Filed Sep. 30, 1982, Ser. No. 444,242

Int. Cl.³ F16D *69/02*

U.S. Cl. 188—250 B **10 Claims**

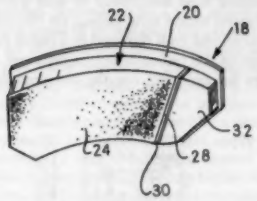
1. A brake pad for frictional engagement to a rotatable member, said brake pad characterized by:

means for lubricating said rotatable member;

means for frictionally engaging said rotatable member having a higher coefficient of friction than said lubricating means;

said lubricating means comprising a solid lubricant positioned such that said lubricating means lubricates a section

of said rotatable member and said section then contacting a leading edge of said frictionally engaging means before



contacting any other portion of said frictional engaging means.

4,485,899

SHOCK ABSORBER UNIT FOR VEHICLES

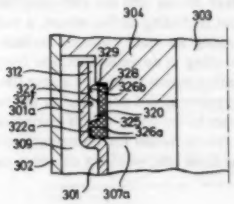
Manfred Grundei, Niederwerrn, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 29, 1982, Ser. No. 403,051

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131262

Int. Cl.³ F16F 9/52

U.S. Cl. 188—277 **6 Claims**



1. In a shock absorber unit to be used particularly as an insert for a compression strut comprising

a cylinder (1) having an axis and first and second ends, respectively, and defining a cavity (7) therein;

a piston rod guiding and sealing unit (4, 5) adjacent said first end of said cylinder and including a piston rod guiding member (4);

a piston unit (6) within said cavity (7) dividing said cavity (7) into two working chambers (7*a*, 7*b*) and being provided with at least one piston passage (41, 44) connecting said working chambers (7*a*, 7*b*);

a piston rod (3) connected to said piston unit (6) within said cavity (7) and extending through said guiding and sealing unit (4, 5);

a container (2) having first and second ends, respectively, adjacent said first and second ends of said cylinder (1), respectively, and surrounding said cylinder (1) such as to define a compensation chamber (9) outside said cylinder (1), said container (2) being closed at its second end by a bottom wall;

a bottom valve unit (10) adjacent said second ends of said cylinder (1) and said container (2) providing a flow passage between said cavity (7) and said compensation chamber (9);

means defining a by-pass (13, 12) between said cavity (7) and said compensation chamber (9) adjacent said first ends of said cylinder (1) and said container (2), respectively, said by-pass (13, 12) defining a throttling flow cross-sectional area (13);

said cavity (7) being filled with a damping liquid;

said compensation chamber (9) being partially filled with said damping liquid and partially with gas;

the improvement comprising that

said throttling flow cross-sectional area (13) is at least partially defined by at least one temperature sensitive member (11) having a high coefficient of thermal expansion, such that said throttling flow cross-sectional area (13) is reduced in response to increasing temperature,

said throttling cross-sectional area being defined by a gap (321) between opposed ends of a gapped ring member (320),

said gapped ring member (320) engaging by a radially outer circumferential face (326*a*, 326*b*) thereof a circumferential supporting face (327) adjacent said first ends of said cylinder (301) and said container (302) and engaging by an end face (328) thereof axially directed away from said second ends of said cylinder (301) and said container (302) an axially directed supporting face (329), both said supporting faces (327, 329) being stationary with respect to said cylinder (301), said gap (321) having a first exit (321*a*) toward said cavity (307*a*) and a second exit (321*b*) toward said compensation chamber (309), said second exit (321*b*) opening into an annular collecting chamber (325) surrounding said axis, said collecting chamber (325) being connected to said compensation chamber (309) by at least one passage (312) having an angular extent about said axis of less than 360°.

4,485,900

DAMPING FORCE GENERATING MECHANISM IN HYDRAULIC DAMPER

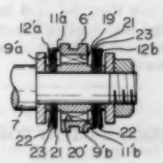
Tetuo Kato; Ieaki Miura; Masahiro Ashiba, and Tomio Imaizumi, all of Kanagawa, Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Jul. 13, 1982, Ser. No. 397,860

Claims priority, application Japan, Jul. 20, 1981, 56-107422[U]

Int. Cl.³ F16F 9/348

U.S. Cl. 188;282 **3 Claims**



1. A damping force generating mechanism in a hydraulic damper including a housing containing therein oil and an oil chamber partitioning member such as a piston, said mechanism comprising a communicating passage provided in said oil chamber partitioning member and defining a valve seat on one end thereof, and an annular plate valve provided on one end of said passage and being deflectable toward and away from said valve seat for permitting the oil to flow in said passage in one direction, said plate valve comprising a plurality of mutually overlapping annular plates having inner circumferences, said inner circumferences of all of said annular plates being rigidly connected to said oil chamber partitioning member, at least one of said annular plates constituting a projection member having on the outer circumferential portion thereof at least one integral projection deflecting the outer circumferential portion of at least one other of said annular plates in a direction to be separated from said valve seat.

4,485,901

WINCH BRAKE ASSEMBLY

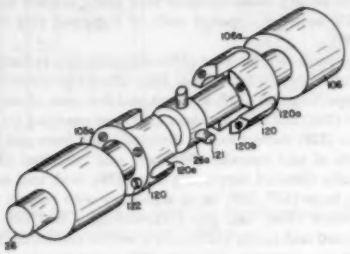
Georges E. Papadopoulos, Rua Visonte De Piraza, 284 Apt. 701, Ipanama, Rio De Janeiro, Brazil

Filed Dec. 4, 1981, Ser. No. 327,464

Claims priority, application Brazil, Dec. 5, 1980, 8.008.000

Int. Cl.³ B60K *41/20*

U.S. Cl. 192—8 R **8 Claims**



1. A brake assembly comprising:

relatively stationary axial core means;

pin means extending radially from said axial core means and fixed thereto;

cam means defining a pair of spaced-apart substantially identical cam surfaces axially carried on said axial core means, said cam means thereby defining an axial distance between said cam surfaces, said cam surfaces having substantially planar surfaces and being rotatable relative to said core means and to one another;

locking means disposed between said cam surfaces and axially movable on said axial core means, said pin means guiding the axial movement of said locking means, but preventing rotation of said locking means relative to said axial core means;

means for rotating said cam surfaces between a first angularly aligned position where said axial distance between said cam surfaces is substantially equal in all angular positions, and a second position out of angular alignment, said axial distance in said aligned first position being greater than the axial length of said locking means to permit relative rotation between said cam surfaces and said axial core means, said axial distance in said second unaligned position being less than the axial length of said locking means to wedge said locking means between said cam surfaces to prevent the rotation of said cam surfaces relative to said core means.

4,485,902

RECYCLING ARRANGEMENT FOR A HYDRAULIC COUPLING

Werner Storz, Benningen, Fed. Rep. of Germany, assignor to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG, Fed. Rep. of Germany

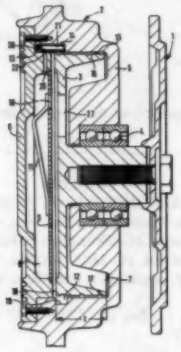
Filed Nov. 6, 1981, Ser. No. 319,079

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041829

Int. Cl.³ F16D *35/00, 33/10*

U.S. Cl. 192—58 B **20 Claims**

1. A hydraulic coupling comprising a primary coupling part including a pot-shaped pulley means, and a secondary coupling part including a housing means for housing said pot-shaped pulley means and cover means for covering an opening in said housing means, means for dividing the housing means into a supply chamber means for supplying coupling fluid and working chamber means for receiving coupling fluid from said supply chamber means, means for rotatably supporting the pulley means in the working chamber means, and recyclinng means for enabling a recycling of coupling fluid between the supply chamber means and the working chamber means, said recycling means including circumferentially extending channel means in an interior of the housing means having a width in the axial direction of the coupling which is sufficient to extend over at least a portion of the width of the pulley means for receiving coupling fluid distributed by said working chamber means, the channel means terminating, on the side nearest the cover means in an end wall disposed in a radial plane in which a forward edge of the pulley means is disposed, means in the housing means for pumping out the coupling fluid from the



working chamber means into the recycling means, the means for pumping out including baffle means, a radially inner surface disposed along an inner cylinder surface of the housing means and extending in an axial direction from an area above the supply chamber means to an area above the channel means, coupling fluid return means provided in the baffle means and return bore means in the cover means communicating with the coupling fluid return means for returning fluid to said supply chamber means from said working chamber means.

4,485,903

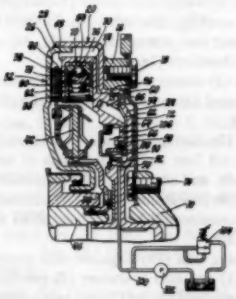
CENTRIFUGAL ACTUATED FRICTION CLUTCH WITH A HYDRAULIC APPLY PISTON

Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 24, 1982, Ser. No. 381,434

Int. Cl.³ F16D *25/063*

U.S. Cl. 192—86 **3 Claims**



1. A fluid pressure centrifugally sensitive clutch comprising; a friction clutch; a housing; a differential area apply piston slidably disposed in said housing and cooperating therewith to form a feed chamber and an apply chamber having an effective area greater than the effective area of said feed chamber; fluid source means for supplying fluid at selective pressure levels to

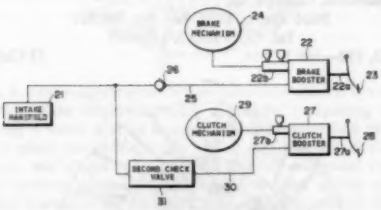
said feed chamber; restrictive flow passage means connecting said feed chamber to said apply chamber; first centrifugally responsive valve means for controlling exhausting of fluid from said apply chamber to establish a static pressure level in said apply chamber determined by a first speed-pressure relationship which is equal to or less than the pressure level in said feed chamber for urging clutch application; and second centrifugally responsive valve means for controlling the exhaust of fluid from said apply chamber to establish a static pressure level in said apply chamber equal to or less than the pressure level in said feed chamber as determined by a second predetermined speed-pressure relationship in said apply chamber for urging engagement of said clutch, said second centrifugally responsive valve means being opened at higher initial pressure and having a less rapidly increasing speed-pressure relationship than said first centrifugally responsive valve, fluid pressure in said feed chamber being operable to urge disengagement of said clutch and being effective to establish the required engagement pressure for said clutch in accordance with the pressure level of the fluid source.

4,485,904

VACUUM SYSTEM FOR AN AUTOMOTIVE VEHICLE

Jun Udono, Higashiyamato, and Yasufumi Ideta, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 17, 1981, Ser. No. 274,404
Claims priority, application Japan, Jun. 20, 1980, 55-84258
Int. Cl.³ B60T *13/48*
U.S. Cl. 192—0.094 **10 Claims**



1. A vacuum system for an automotive vehicle which avoids the use of a conventional vacuum tank, and which comprises:

(a) a vacuum generator for generating a negative pressure to actuate the system while the vehicle is travelling;

(b) a brake mechanism for applying a brake force to the vehicle;

(c) a vacuum brake booster actuated by a brake pedal for actuating said brake mechanism according to a difference between negative pressure introduced from said vacuum generator and atmospheric pressure introduced from the outside when said brake pedal is depressed;

(d) a first check valve means for passing air from said vacuum brake booster to said vacuum generator when a vacuum is generated by said vacuum generator but for stopping air from flowing from said vacuum generator to said vacuum brake booster, said first check valve being connected between said vacuum brake booster and said vacuum generator;

(e) an actuator mechanism for applying an actuating force to the vehicle;

(f) a vacuum actuator actuated by an actuator pedal for actuating said actuator mechanism according to a difference between negative pressure introduced from said vacuum generator and atmospheric pressure introduced from the outside when said actuator pedal is depressed; and

(g) a second check valve for passing air from said vacuum actuator to said vacuum generator when a vacuum is generated by said vacuum generator in a normal state in the same manner as in said first check valve but for passing a small quantity of air from said vacuum actuator to said vacuum generator through an orifice provided therewithin when a great volume of air is introduced into said vacuum actuator in an abnormal state, said second check valve being connected between said vacuum actuator and said vacuum generator in parallel with said first check valve,

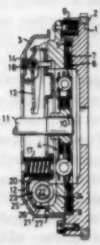
whereby it is possible to prevent a great volume of air from being introduced into said vacuum generator, that is, to prevent negative pressure in the vacuum generator from being reduced quickly even when said vacuum actuator becomes defective in airtightness, thus improving the reliability of the function of said brake booster, and whereby said second check valve eliminates the need for a conventional vacuum tank.

4,485,905

CENTRIFUGAL FRICTION CLUTCH FOR MOTOR VEHICLES WITH THREE POSITION OF OPERATION

Berndt E. Radbo, Västra Frölunda, and Grzegorz K. Janiszewski, Angered, both of Sweden, assignors to AB Volvo, Gothenburg, Sweden

Filed Jun. 3, 1982, Ser. No. 384,663
Claims priority, application Sweden, Jun. 4, 1981, 8103523
Int. Cl.³ F16D *43/06*
U.S. Cl. 192—103 A **4 Claims**



1. A friction clutch, especially for motor vehicles, comprising a driven clutch element in the form of at least one disc with friction lining, which can be pressed against a frictional surface on a driving clutch element by means of a pressure plate which is non-rotationably but axially displaceably joined to the driving clutch element, a clutch cover rigidly joined to the driving element, centrifugal weights disposed between the clutch cover and the pressure plate and interacting with the pressure plate to vary its pressing force against the disc in response to the rotational speed, said centrifugal weights being in the form of radially displaceable elements disposed in radially outwardly narrowing spaces which have wall elements facing toward the pressure plate, said wall elements forming portions of an axially displaceable intermediate plate disposed between the pressure plate and the clutch cover and spring biased toward the pressure plate, a disengaging mechanism acting between the intermediate plate and the clutch cover to displace the intermediate plate between a first position in which the clutch is engaged regardless of the rotational speed and a second position in which the clutch is engaged in response to the rotational speed and a third position in which the clutch is disengaged regardless of the rotational speed.

4,485,906

TORSIONAL VIBRATION DAMPER, PARTICULARLY FOR THE CLUTCH DISK OF A MOTOR VEHICLE FRICTION DISK CLUTCH

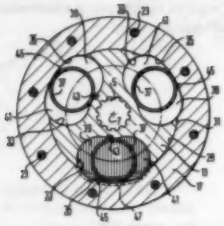
Dieter Lutz, Schweinfurt, and Wolfgang Thieler, Hassfurt-Uchenhofen, both of Fed. Rep. of Germany, assignors to Sachs-Systemtechnik GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 20, 1982, Ser. No. 400,834

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 3130228

Int. Cl.³ F16D *3/14, 3/80*

U.S. Cl. 192—106.1 **13 Claims**



1. Torsional vibration damper with two damper parts **(1, 9)** rotatable relative to one another around a common rotational axis **(7)** over a defined rotational angle which together enclose at least one damper chamber **(33,35)** sealed outwardly and at least partially filled with a hydraulic fluid; with a displacement body **(37)** in each said damper chamber **(33, 35)** which divides said damper chamber **(33, 35)** in the circumferential direction into two spaces **(39, 41)** whose volume relation changes during the relative rotation of said damper parts **(1, 9)**; and with a throttle connection **(46, 47)** between the two said spaces **(39, 41)** as a bypass connection to said displacement body **(37)**, characterized in that said damper chamber is formed by means of two recesses **(33, 35)** located opposite one another, having volumes which are different from one another in faces **(29, 31)** of said damper parts **(1, 9)** which faces complement one another, lie opposite one another adjacently and move relative to one another during relative rotation; and in that said displacement body is formed as a roller body **(37)** whose circumference is in a friction-locking or form-locking drive rotational contact with faces **(43, 45)** of said recesses **(33, 35)**, which faces are located opposite one another.

4,485,907

THREE STAGE DAMPER DISC WITH INCREASED SUPPORT FOR SIDE PLATES

Yoshio Nishimura, Neyagawa, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

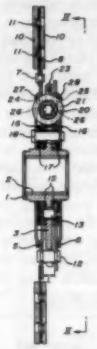
Filed Aug. 6, 1981, Ser. No. 290,530

Claims priority, application Japan, Sep. 25, 1980, 55-133812

Int. Cl.³ F16D *3/66, 3/14*

U.S. Cl. 192—106.2 **9 Claims**

1. In a damper disc including a hub having a radial flange, a pair of annular side plates disposed on respective sides of the flange, and respective pairs of springs disposed in openings formed in the flange and side plates and connected therebetween, the improvement which comprises a pair of sub-plates, each of which is disposed axially outwardly of a respective side plate, means for connecting the radially inner portions of the sub-plates together, first frictional members between the flange and side plates, respectively, and having a relatiely small frictional force, and second frictional members between the side plates and sub-plates, respectively, and having a relatively large frictional force, whereby the distance between the side plates is minimized, whereby the springs are stably supported,



and whereby the respectve side plates are supported on both sides to prevent deformation or breakage thereof.

4,485,908

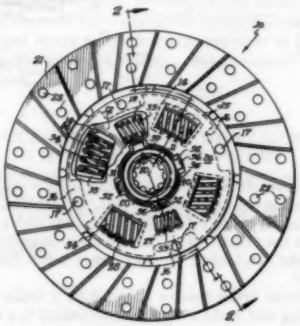
VIBRATION DAMPER WITH VARIABLE RATE SPRINGS AND DAMPING FRICTION

Sidney U. Gatewood, Roseville, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 9, 1982, Ser. No. 386,567

Int. Cl.³ F16D *3/14, 3/66*

U.S. Cl. 192—106.2 **12 Claims**



1. A clutch driven plate assembly having torsional vibration damping means therein, including a hub having a barrel and radial flange, a clutch driven plate journalled on said barrel and carrying friction facings, a spring retainer plate on the opposite side of the hub flange from and secured to said clutch driven plate, axially aligned spring windows in said plates and hub flange including a pair of diametrically oppositely disposed axially aligned spring windows of the same length in the clutch driven and spring retainer plates and hub flange and a plurality of circumferentially spaced sets of axially aligned spring windows having lost motion means comprising axially aligned windows of the same length in the clutch driven and spring retainer plates and windows of a greater length than the plate windows in the hub flange and damper springs received in each set of aligned windows including a pair of low rate compression springs received in the pair of diametrically oppositely disposed spring windows and a plurality of high rate compression springs received in the plurality of circumferentially spaced spring windows, the improvement comprising a friction plate journalled on the hub barrel concentric with and

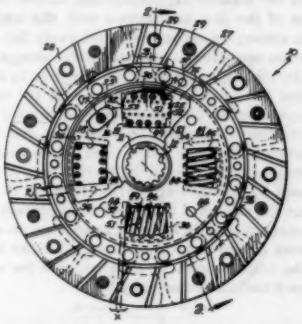
in the same plane as the spring retainer plate, lost motion means connecting said friction plate and spring retainer plate comprising a plurality of circumferentially spaced tangs on the periphery of the friction plate and a plurality of notches on the inner periphery of said spring retainer plate receiving said tangs, the length of each notch being greater than the width of its corresponding tang, and a resiliently biased thrust plate on said barrel in frictional engagement with said friction plate.

4,485,909

MULTIPLE STAGE VIBRATION DAMPER

Sidney U. Gatewood, Roseville, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 14, 1982, Ser. No. 388,342
Int. Cl.³ F16D *3/66, 3/14*
U.S. Cl. 192—106.2 **9 Claims**



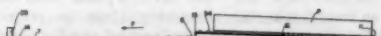
1. A torsional vibration damper assembly utilized in a clutch friction plate construction for a vehicle, comprising a hub having a barrel and an integral radial flange, a pair of inner drive plates journalled on the hub on opposite sides of the hub flange, said plates being secured together in spaced relation and carrying friction facings, a pair of outer spring retainer plates journalled on said hub and secured in spaced relation outside said inner plates by a plurality of stop pins, said outer plates frictionally engaging said hub while said inner plates are spaced from frictional contact with said hub, said inner plates and hub flange having axially aligned arcuate elongated slots receiving said stop pins, said inner and outer plates and said hub flange having a first pair and a second pair of oppositely disposed axially aligned spring windows, said pairs of windows being removed by 90°, damper springs located in each set of spring windows, and lost motion means included in each pair of spring window sets providing a three-stage damper operation.

4,485,910

CONTAINER HANDLING SYSTEM

Charles P. Tabler, Hamilton, Ohio, assignor to Buckhorn Material Handling Group Inc., Cincinnati, Ohio

Filed Apr. 15, 1982, Ser. No. 368,843
Int. Cl.³ B65G *13/00*
U.S. Cl. 193—36 **21 Claims**



10. A container handling apparatus for forwarding containers in a longitudinal forwarding direction and returning containers in a longitudinal returning direction, comprising:

rail means for the gravity conveying of containers between different container handling positions;

said rail means including a first rail, a second rail, and a third rail;

stationary means for supporting said first rail, said second rail, and said third rail;

said first rail having longitudinally opposed container receiving and container forwarding ends;

said first rail being mounted upon said stationary means at a stationary intermediate point between said container receiving and container forwarding ends, for pivotal movement about said stationary intermediate point between a container forwarding position having a positive slope orientation corresponding with said longitudinal forwarding direction and a container receiving position having a negative slope orientation relative to said positive slope orientation;

said second rail having longitudinally opposed ends, one of said ends being a container handling end and, the other of said ends being a container receiving and returning end;

said second rail being mounted upon said stationary means at a point of rotation stationary relative to said stationary means for pivotal movement about said point of rotation whereby said receiving and returning end can move between a container receiving position and a container returning position;

means for operating said first rail to move said first rail between said container receiving position and said container forwarding position to produce a change in said slope orientation for moving a container in said longitudinal forwarding direction from said container receiving position to said container forwarding position;

said second rail being oriented relative to said first rail such that when a container is received at said container receiving position the container continues to advance in said longitudinal forwarding direction to said container handling end;

said third rail having longitudinally opposed container receiving and temporary storing ends;

means for operating said second rail to move said second rail between said container receiving position and said container returning position such that when a container is on said first rail and said first rail is in said container forwarding position, the container will firstly be received by said container receiving and container returning end of said second rail, will secondly be advanced in said longitudinal forwarding direction to said container handling end, then thirdly be advanced in said longitudinal returning direction to said container receiving and container returning end of said second rail and fourthly, be advanced to said third rail;

said third rail being stationarily mounted upon said supporting means and oriented relative to said second rail such that when a container is received from said second rail at said container receiving end, the container advances in said longitudinal returning direction to said temporary storing end.

4,485,911

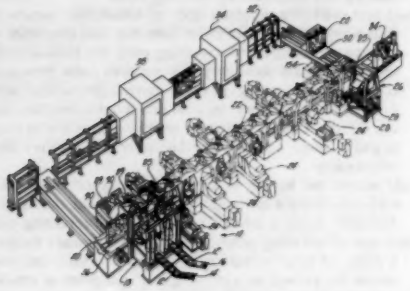
TRANSFER MACHINE

George Cameron, Birmingham, Mich., assignor to The Budd Company, Troy, Mich.

Filed Jan. 26, 1982, Ser. No. 342,633
Int. Cl.³ B65G *47/00*
U.S. Cl. 198—345 **6 Claims**

1. A transfer machine for holding and moving a work piece from station to station for work operations at said stations, comprising: a plurality of pallets moveable horizontally in a predetermined path, elongated guide means including a rail disposed in a horizontal reference plane for guiding said pallets furing movement from station to station, said pallets having surfaces complementary to surfaces on said rail and engageable therewith upon clamping at each said station, means on said

pallets biasing said surfaces out of engagement with each other during movement of said pallets from station to station, means for clamping said pallets in a stationary location at each of said stations, a work surface for receiving a work piece, means for rotating said work piece on said work surface to a predetermined position about a vertical reference axis, loading means for moving said work piece into engagement with one of said



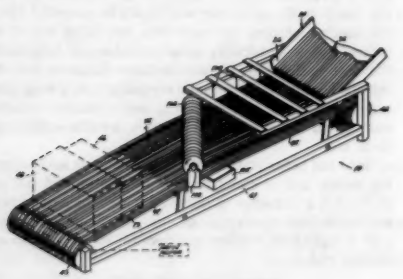
pallets at a first one of said stations from a position in which said reference axis is vertical to a position in which said reference axis is horizontal, means for clamping said work piece in fixed relation on said pallet while said work piece is maintained in predetermined location relative to said horizontal reference axis, and means for moving said pallets with said work piece simultaneously to the adjacent station.

4,485,912

ARTICLE ALIGNMENT AND CONVEYING APPARATUS

D. Murphy Carmichael; Walter L. Davis, both of Milton-Freewater, Oreg., and Vernon L. Perry, Walla Walla, Wash., assignors to Key Electrosonic Corporation, Milton-Freewater, Oreg.

Filed Jun. 1, 1982, Ser. No. 383,752
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—382 **13 Claims**



1. Article alignment and conveying apparatus for conveying elongated articles past a work station in which the articles are aligned in single file in a plurality of transversely spaced lanes and then moved longitudinally past the work station, in which the articles have a prescribed maximum cross-sectional dimension, comprising:

an article feed means upstream of the work station for successively feeding the articles;

an elongated belt conveyor extending in the longitudinal direction from the article feed means past the work station;

said conveyor having a plurality of movable elongated narrow belts extending from the article feed means past the work station in continuous engaging parallel relationship forming a resultant wide movable continuous article conveying surface for receiving the articles from the discharge section and moving the articles single file past the work station in the plurality of transversely spaced lanes;

said belt conveyor having a first bed section for slidably supporting the plurality of narrow belts adjacent the article feed means in which the first bed section has a plurality of laterally spaced longitudinal grooves defining valleys and adjacent ridges to slidably elevate respective narrow belts on the ridges to corrugate the wide movable continuous article conveying surface as the narrow belts move over the first bed section with the belts in the valleys defining the lanes and receiving the articles from the article feed means and longitudinally aligning the articles in the lanes between the narrow belts on the ridges;

said valleys having a defined valley width and said ridges having a defined ridge width;

said belt conveyor having a second bed section at the work station for slidably supporting the narrow belts downstream of the first bed section with the wide movable article conveying surface being relatively flat; and

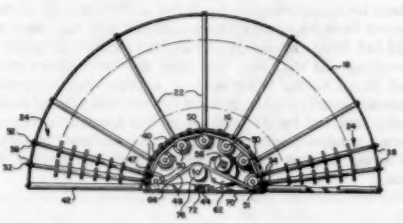
drive means operatively connected to the elongated narrow belts for slidably moving the narrow belts in unison over the first and second bed sections with the wide article conveying surface changing from a corrugated contour to a substantially flat contour to initially successively receive the articles from the article feed means and form the articles into single files on the narrow belts in the valleys confined by the moving narrow belts on the ridges to register the articles in the lanes and to prevent transverse movement of the articles as the articles are moved toward the work station and for moving the articles in the lanes past the work station with the contour of the wide article transport surface substantially flat.

4,485,913

CONVEYOR DRIVE SYSTEM

Fritz F. Treiber, Centerville, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Dec. 11, 1981, Ser. No. 329,643
Int. Cl.³ B65G *13/07*
U.S. Cl. 198—790 **4 Claims**



1. A drive system for an arcuate conveyor section having a plurality of similar-length article conveying rollers disposed for support by and rotation between inner and outer concentrically-disposed horizontal tracks supported on a framework, said drive system comprising:

an endless double V-belt located horizontally inwardly of the inner track, said V-belt having a planar outer face and an inner driving face comprising at least two projections;

pulley means mounted on space vertical axes for supporting said V-belt for circulating motion in a horizontal plane with its said planar outer face disposed essentially concentric with and in close proximity to said inner track, the height of said pulley means being related to the V-belt so as to expose the thin upper side edge of said belt above the upper ends of said pulley means;

means on said rollers and said inner track for restraining said rollers against axial movement while allowing vertical

movement of the ends of the rollers supported in said track;

a driven member comprising a shaft extension on that end of each roller supported by said inner track with said extensions extending inwardly from the rollers beyond said inner track and being in frictional engagement with and supported by the exposed upper edge of said belt; and

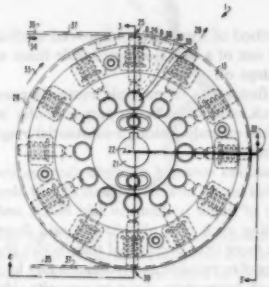
drive means comprising an electric motor for driving said pulley means to impart motion to said belt and in turn rotate said rollers.

4,485,914

VARIABLE DRIVE PIN PROJECTION MECHANISM FOR A BELT SPROCKET DRIVE WHEEL

Vlastimil Frank, Warrenton, Va., assignor to IBM Corporation, Armonk, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,911
Int. Cl.³ B65G *23/06*
U.S. Cl. 198—834 **14 Claims**



2. A semiconductor chip conveying apparatus including:

a belt having equally spaced openings for carrying chips;

a drive sprocket wheel for driving the belt, containing a plurality of radially spaced pin openings at the periphery of the wheel;

a plurality of drive pins, each slideably and retractably positioned within a respective one of said pin openings;

drive means including plunger means, and cam follower operatively connected to said drive pins;

said drive means actuating a pin into drive position while another pin is retracted;

locking means for locking in position the retracted pins and drive means associated with the retracted pins;

whereby vibration of the belt and wear of the drive means and pins are kept at a minimum.

4,485,915

CHILD RESISTANT TABLET PACKAGE

Walter G. Berghahn, Scotch Plains, N.J., assignor to Bristol-Myers Company, New York, N.Y.

Filed Nov. 14, 1983, Ser. No. 551,390
Int. Cl.³ A45C *13/10*
U.S. Cl. 206—1.5 **7 Claims**

1. A child resistant package comprising an outer container and an inner product supporting tray; said inner tray being adapted to be inserted into said container to a locked position and removed therefrom by disengaging a locking means and withdrawing the tray from said container;

(a) said container having side walls spaced apart from each other, each of which has front and back margins; said container also having a roof and floor joined to said container side walls; said container roof and floor also being provided with front and back margins; said container being open at its front and back end and the back margin of said container roof and floor being spaced backwardly from he back margins of said container side walls;

(b) said product supporting tray having a bottom and a pair of tray side walls that are joined to said tray bottom and extend upwardly therefrom, each of said tray side walls being provided with a slot cut through its back margin that extends partway forwardly in said tray side walls to form a flexible tab adapted to be flexed inwardly;

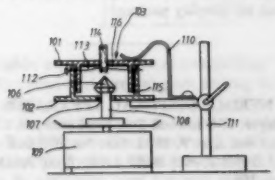
(c) each of said flexible tabs being provided with a protruding surface which causes said tab to be flexed inwardly when said tray is inserted into container until it reaches beyond said back margins of said container side walls at which time said tab returns to its unflexed position and serves to lock said tray in said container.

4,485,916

SAFETY ARRANGEMENT FOR PRECIOUS OBJECTS

Peter Krejcik, Dominikanerbastei 5, Vienna, Austria (A-1010)

Continuation of Ser. No. 285,067, Jul. 20, 1981, abandoned. This application Aug. 1, 1983, Ser. No. 518,765
Claims priority, application Austria, Jul. 18, 1980, 3745/80; Dec. 11, 1980, 6033/80
Int. Cl.³ A45C *11/16*
U.S. Cl. 206—45.34 **4 Claims**



1. A safety device for holding and storing a rigid valuable object, which comprises

(a) a valuable object,

(b) two housing parts movable into a closed position to encompass a chamber for holding and storing the object, the housing parts being at least partially of a transparent material to allow visual inspection of the valuable object in the chamber, the transparent material being weldable only at very high temperatures,

(1) said housing parts defining an opening means permitting physical access to the object from outside the parts when the parts are in the closed position, the opening means including an opening having an axis extending perpendicularly to the housing parts and being dimensioned so that the diameter of the largest circle inscribable in the opening about said axis is smaller than the diameter of the largest sphere inscribable in the object within the confines of said chamber; and

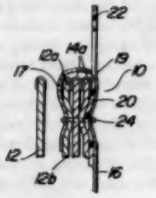
(c) a sealable lock securing the two housing parts on the closed position.

4,485,917

HAND WEARING APPAREL DISPLAY PACKAGE AND METHOD AND MACHINE FOR ASSEMBLY THEREOF

Jasper N. Smith, Buffalo Grove, Ill., assignor to Wells Lamont Corporation, Chicago, Ill.

Filed Mar. 12, 1982, Ser. No. 357,582
Int. Cl.[3] B65D *31/00*
U.S. Cl. 206—278 5 Claims



1. A hand wearing apparel display package having left-hand and right-hand apparel members each comprised of front and back panel portions including in combination,

left-hand and right-hand apparel members superimposed with respect to each other with the palm facing the back,

a plastic hanger member positioned adjacent the back panel of one of the hand apparel members along the open end thereof,

a labeling tag positioned on the outside surface of said plastic hanger member and superimposed thereon, and

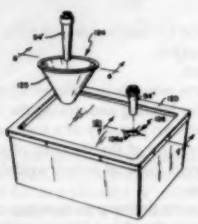
metal stapling means extending through the back portion of one of said hand apparel members and through said plastic hanger member and said labeling tag with the ends of said stapling means turned inwardly and clenched to the inside on the outside surface of said plastic hanger to secure the hand apparel members together to provide a cushioning effect to the stapled hand apparel members to complete the display package and which prevents tearing of the hand apparel members during removal and of the members from the display package.

4,485,918

NEEDLE DISPOSAL APPARATUS

Theodore Mayer, 256 Inwood Dr., Rochester, N.Y. 14625

Filed Apr. 9, 1984, Ser. No. 598,066
Int. Cl.[3] B65D *25/00*; B65F *1/02, 7/00*; A61M *5/32*
U.S. Cl. 206—366 9 Claims



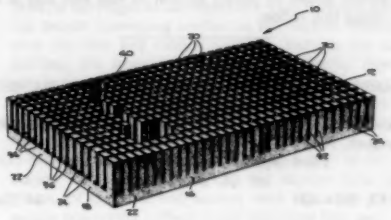
5. A container for receiving and containing sheathed hypodermic needles, said container comprising a wall portion and means associated with said wall portion for facilitating the resheathing of both needle elements of a sheathless hypodermic needle of the type having juxtaposed first and second needle elements, each needle element having its own protective sheath which is to be applied before entering said container.

4,485,919

STERILIZABLE FOAM SUPPORT TRAY FOR MEDICAL INSTRUMENTS

Dan Sandel, 19524 Halsted St., Northridge, Calif. 91324

Continuation of Ser. No. 407,447, Aug. 12, 1982,. This application Apr. 9, 1984, Ser. No. 598,244
Int. Cl.[3] B65D *81/16*
U.S. Cl. 206—370 4 Claims



1. The method of forming an improved medical instrument support tray out of a block of sterilizable foam material comprising the steps of:

cutting a first series of multiple mutually-parallel slices in said block, said slices being perpendicular to said planar top surface extending along a substantial length of one axis of said block;

cutting a second series of multiple slices extending along a substantial length of a second axis of said block, forming a plurality of finger portions in said block; and

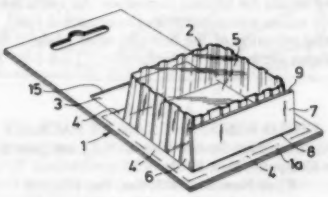
under cutting each of a plurality of said finger portions a distance more than one half of their width from along one side thereof to provide an asymmetrically located reduced width web connection along an opposite side thereof and extending between the finger portions and adjacent portions of said block to facilitate removal of said finger portions from said block.

4,485,920

RESEALABLE PACKAGE

Arnold R. Skylvik, Trollhättan, Sweden, assignor to Aktiebolaget Cerbo, Trollhattan, Sweden

Filed Jan. 4, 1984, Ser. No. 568,132
Claims priority, application Sweden, Feb. 11, 1983, 8300749
Int. Cl.[3] B65D *6/06, 73/00*
U.S. Cl. 206—468 6 Claims



1. Resealable package comprising

a backing with an object removal opening; a bubble displaceably mounted on the backing and having an opening facing towards the backing, this opening at least partially being uncoverable for removal of the goods enclosed in the package;

a flap on the backing;

said flap being foldable from a first position enclosing the object removal opening in the backing and preventing displacement of the bubble relative the backing, to a second position uncovering the removal opening and en-

abling displacement of the bubble relative the backing; and

at least parts of the openings of the bubble and backing coincide.

4,485,921

PACKAGE FOR A MASK

Stanley Geller, Roslyn Heights, N.Y., assignor to Fun World, a division of Easter Unlimited, Inc., Glen Cove, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,368

Int. Cl.³ B65D *73/00, 65/38, 85/18*

U.S. Cl. 206—471 **8 Claims**

1. A package for a mask having a predetermined configuration with a front convex surface and a rear concave surface in which the face of a wearer of the mask is to be positioned, comprising a molded shell having a convex surface adapted to conform to the predetermined configuration of said mask, the convex surface of said shell fitting in said rear concave surface of said mask, and coupling means for releaseably coupling said mask to said shell so that said front convex surface of said mask is exposed, said front convex surface of said mask remaining uncovered by any packaging while said mask is coupled to said shell to permit manual examination thereof.

4,485,922

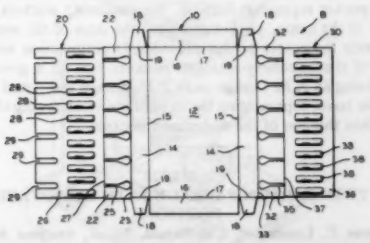
TRAY FOR CARDED PRODUCTS

John D. Desmond, Philadelphia, Pa., and Barbara M. Feirman, Forest Hills, N.Y., assignors to Container Corporation of America, Chicago, Ill.

Filed Jan. 17, 1984, Ser. No. 571,384

Int. Cl.³ B65D *1/34, 5/50*

U.S. Cl. 206—485 **5 Claims**



1. A carton for displaying a plurality of packages, each including one or more articles secured to a face of a card adjacent the lower end thereof, said carton being formed from a unitary blank of foldable sheet material, such as paperboard, and comprising:

(a) a tray including a bottom wall panel and pairs of opposed side and end wall panels foldably joined to each other and to side and end edges of said bottom wall panel and upstanding therefrom;

(b) an integral partition structure including:

(i) a pair of opposed, inclined side panels foldably joined to upper edges of respective tray side wall panels and sloping downwardly and inwardly therefrom toward said tray bottom wall panel and presenting longitudinally spaced, transversely extending parallel slots aligned with each other to receive opposite side portions of said package cards;

(ii) upper and lower bottom panels foldably joined to the lower ends of said side panels and disposed adjacent said tray bottom wall panel;

(c) at least one upper bottom panel having a plurality of longitudinally spaced, raised central portions for supporting said packaged articles;

(d) at least one lower bottom panel having a plurality of longitudinally spaced notches extending inwardly from a free edge thereof to receive adjacent lower corner portions of said cards to allow said cards to rest on said tray bottom wall panel and thereby stabilize the cards.

4,485,923

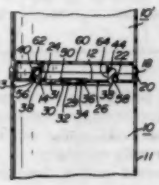
STACKABLE CONTAINER

Ralph A. Schwaikert, Lakeville, Conn., assignor to RASCO Incorporated, Lakeville, Conn.

Filed May 24, 1982, Ser. No. 381,138

Int. Cl.³ B65D *21/02*

U.S. Cl. 206—508 **3 Claims**



1. A stackable, closable container comprising:

a generally cylindrical body portion having an upper and a lower end,

a generally circular top end wall joined to said upper end of said body portion, said top end wall having a generally circular opening with a raised downwardly curved surface on its periphery, said top end wall also having an axially extending raised flange with a generally rounded upper surface disposed on its periphery,

a removable, generally circular, cover engaging said opening, said cover having a top and bottom surface, said cover having a raised rim on the periphery of its top surface, when said cover closes said opening the top of said raised rim overlaying the top of said raised flange, said cover further including a raised border projection on the periphery of its bottom surface for engaging the bottom of said raised downwardly curved surface of said opening, and

a generally circular bottom end wall joined to said lower end of said body portion, said bottom end wall having an axially extending chime on its periphery and an annular raised rings, the chime being of integral construction with the container body portion, the depth of the chime being greater than the depth of the raised ring, said annular raised ring disposed between the center of said bottom end wall and said chime, said annular raised ring of sufficient dimensions, configuration, and proper location so as to snugly friction interlock with said cover of another container of duplicate construction of that as defined above so as to firmly couple one container in stacked relation to

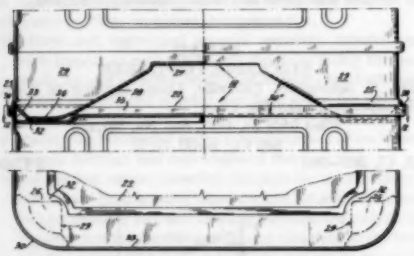
another container such that the containers may be tilted at a substantial angle from the vertical without separating the coupled containers and when such containers are in stacked relation, the chime of one container rests on the raised flange of the container beneath it, with the combined depths of said chime and raised flange greater than the distance from the top end wall of the container to the top of said raised rim of the cover so that the cover of the lower container bears essentially none of the weight of the upper container but acts solely as a locking device.

4,485,924

SQUARE STACKABLE AND PALLETIZABLE DRUM

Angel Ripoll, C/Parque, 27-Cartagena (Murcia), and Antonio Vidal, Pza. Caudillo, 15-Sedavi (Valencia), both of Spain

Continuation-in-part of Ser. No. 134,872, Mar. 28, 1980, abandoned. This application Jul. 26, 1982, Ser. No. 401,841
Claims priority, application Spain, Feb. 4, 1980, 248326
Int. Cl.³ B65D *21/02*
U.S. Cl. 206—511 **10 Claims**



1. A stackable palletizable, rectangular drum, comprising:

a rectangular top having an upraised perimetral rim around the drum, said rectangular rim having corners each of which is curvedly rounded;

said top is formed with a drainage channel immediately inward from said rim;

a base portion at the bottom of said drum and adapted to be received just inside said upraised rim of an identical drum when a plurality of said drums are stacked vertically on top of each other; said base portion of said drum comprising a respective support foot at each said corner of said base portion and also extending away from the respective said corner a distance toward the feet at the adjacent corners, while said foot is spaced from the feet at the adjacent corners; each said foot being curved correspondingly to the respective said corners of said rim;

each said foot including on it a peripheral edge portion which is a horizontal surface that is outwardly directed from said foot and also spaced from the bottom of said foot a distance, for applying force directly down upon and such that each said peripheral edge portion at each said corner is adapted to pass the load of said drum through to the said rim at the corners of another said drum on which said drum is stacked; each said foot including a section that is located inwardly of said rim of said other drum below and that is inward of and extends beneath said horizontal surface of that said foot; the corresponding curvatures of said feet and said rims of vertically adjacent drums provides for centering of said drums and for passage of the load of an upper drum through said corners of said drum below;

said drainage channel being of such width inward of said rim and of such depth and said foot being of such height and said horizontal surface being so placed along the height of said foot that said horizontal surface of said feet of one of said drum may rest on the said rim beneath while the parts of said feet below said horizontal surfaces do not extend down far enough to rest on the top of the said drum beneath; and

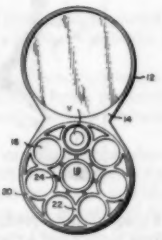
a side wall surface; said rim being an extension up from said wall surface; said base portion feet being an extension down from said side wall surface, said rim and said base portion being adapted to cooperate, when a plurality of said drums are stacked vertically on top of each other, in such a manner as to pass the weight of yet another said drum on top of said drum through said rim, directly into and through said side wall surface, through said base portion and said peripheral edge portion to said rim of another said drum on which said drum is stacked.

4,485,925

RECEPTACLE FOR ADMINISTERING INSULIN

Richard A. Fickert, 74 Vaughn St., Lakeville, Mass. 02346

Filed Mar. 9, 1981, Ser. No. 241,475
Int. Cl.³ B65D *85/42*
U.S. Cl. 206—534 **4 Claims**



1. A receptacle for insulin dosing comprising a bottom part of circular cross section closed at the bottom and open at the top, a top part of corresponding circular cross section closed at the top and open at the bottom, a hinge connecting the top part to the bottom part, and a lip positioned circumferentially of the open top of the bottom part dimensioned to be received within the open bottom of the top part, means defining a series of seven pockets of circular cross section position circularly about the center of the bottom part and a center pocket positioned within the circle of the seven pockets, said pockets being dimensioned to removably receive a vial of insulin such as to enable moving the vial of insulin from one pocket to another, said pockets being so arranged that the center of one of the circularly-arranged pockets is located on a diameter perpendicular to the hinge line connecting the cover to the bottom and the remaining six pockets, not including the center pocket, are arranged symmetrically about the center pocket at uniform spacing peripherally of the container such that if said one pocket represents Sunday, the remaining pockets clockwise of the center pocket represent the days of the week and wherein the center pocket provides, in conjunction with any one of the circularly-arranged pockets, for, on a given day, receiving an A.M. dosage and a P.M. dosage and raised indicia on the cover representing the days of the week arranged in the position thereon of the underlined pockets.

4,485,926

TWIN CARTON PACKAGE WITH REMOVABLE PORTIONS

Thomas E. Lenzmeier, Chanhassen, Minn., assignor to Container Corporation of America, Chicago, Ill.

Filed Aug. 17, 1982, Ser. No. 408,734
Int. Cl.³ B65D *5/54*
U.S. Cl. 206—602 **2 Claims**

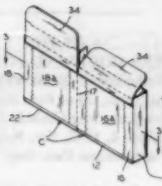
1. A package including a pair of articulated cartons joined to each other by an integral connecting panel having separate detachable portions, said package being formed from a unitary

blank of foldable sheet material, such as paperboard, and comprising:

(a) a pair of similar cartons disposed in side-by-side relation and each carton including a pair of front and rear wall panels and a pair of side wall panels having front and rear side edges foldably joined to and extending between respective front and rear wall panels to form therewith a tubular structure open at the ends;

(b) an integral panel extending across the rear wall panels of said cartons, in face-to-face relation therewith, and including:

(i) a pair of sections having remote side edges foldably joined to corresponding rear edges of respective carton



side wall panels and having adjacent side edges separably joined to each other along a perforated severance line to facilitate separation of said pair of cartons from each other;

(ii) each of said connecting panel sections including one of said detachable portions as defined by a pair of transversely spaced weakened lines of tear, said weakened lines being disposed inwardly of said corresponding rear edges of the respective side wall panels;

(iii) each of said connecting panel sections being of a width and height which is smaller than said rear wall panels;

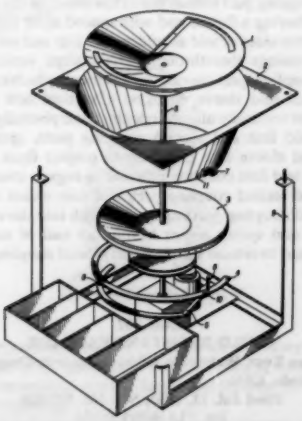
(c) means for closing the ends of said carton structures.

4,485,927

FLATWARE SORTER

Joseph W. Corsmeier, Jr., 806 Canyon Rd., Redwood City, Calif. 94062

Filed Jan. 4, 1982, Ser. No. 336,875
Int. Cl.³ B07C 5/06
U.S. Cl. 209—621 **6 Claims**



1. An apparatus for separating flatware comprising:

(a) a frame structure

(b) a funnel shaped hopper mounted on said frame structure for receiving flatware in random mix fashion;

(c) a separating means, within said hopper, for presenting individual pieces of said flatware to a discharge opening in said hopper;

(d) a disc positioned beneath said hopper;

(e) means for rotating said disc;

(f) a plurality of receptacles receiving specific pieces of said flatware; and

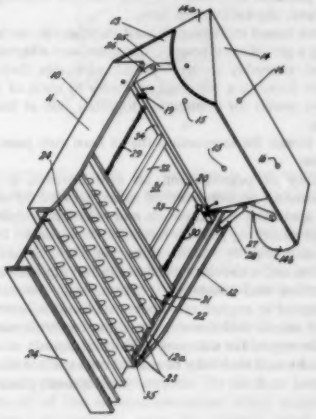
(g) semi-circular guide means adjustably secured to said hopper to define a gauging passage between said hopper and said rotating disc whereby said individual pieces of said flatware are circumferentially moved from said discharge opening by the cooperation of said rotating disc and said semi-circular guide means to said receptacle for said specific piece of said flatware.

4,485,928

ARTICLE STORAGE RACK

Henry E. Staasheim, 5305 Lakeside Dr., Palm Springs, Calif. 92264

Filed Feb. 26, 1982, Ser. No. 352,777
Int. Cl.³ A47F 5/08
U.S. Cl. 211—35 **1 Claim**



1. An article storage unit adapted to be attached in an elevated position while permitting access to articles stored on a slidable dependent storage member, which comprises an enclosure having a base member and side walls, a rear wall attached to said base member at the bottom edge only of said base member by means of a hinge, spring means positioned to normally urge said base member into upright closed position, an upper member attached to said rear wall extending forwardly thereof, said rear wall and said upper member providing surfaces for attachment to a vertical wall or ceiling, respectively, an articulated brace attached from each side of said upper member to each side wall of said base member at the rear portion thereof, an article supporting storage shelf member slidably positioned within said enclosure supported on slides upon said base member with the edges of said shelf member in slidable engagement with grooves formed longitudinally of the side walls of said enclosure, spring means attached at one end to the rear portion of said shelf member and at the other end to the rear of said base member, said spring means normally urging said shelf member rearwardly in superimposed position over said base member, while permitting said shelf member to be drawn forward in dependent position to facilitate access to said articles while at the same time causing axial downward movement between the base member and the rear wall along the hinge, with said rear wall being supported in a vertical

position, said articulated braces permitting downward movement of the base member to a predetermined point.

4,485,929

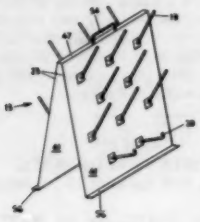
LABORATORY DRYING RACK SYSTEM

Paul J. Betts, Sr., 15487 Linn Ct., Spring Lake, Mich. 49456

Filed Jun. 12, 1981, Ser. No. 273,105

Int. Cl.³ A47F 7/28

U.S. Cl. 211—74 **1 Claim**



1. A portable laboratory drying rack for holding laboratory equipment, the rack comprising:

a drain board including at least two panels, each panel having a plurality of noncircular apertures adapted to receive and releasably secure a plurality of pegs thereon;

means forming a top wall common to each of said at least two panels for connecting together said at least two panels;

base means for supporting the at least two panels on a surface;

plurality of pegs having an arm portion, a noncircular mounting portion adapted to be received by said plurality of apertures of said panels and releasably secured thereto, said mounting portion having a noncircular, lateral cross-section slightly smaller than that of the noncircular apertures, and a shoulder portion interfacing between said arm portion and mounting portion, said mounting portion adapted to engage said aperture of said at least two panels and secure said shoulder portion firmly thereagainst; and

handle means for carrying said drain board;

whereby said rack may be placed on a surface so as to enable liquid to drain off laboratory equipment placed thereon.

4,485,930

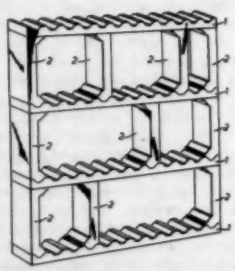
BOTTLE RACK

Wilhelmus Savelkouls, Den Dungen, Netherlands, assignor to S Beton B.V., Grave, Netherlands

Filed Mar. 29, 1982, Ser. No. 363,012

Int. Cl.³ A47B 73/00

U.S. Cl. 211—74 **2 Claims**



1. A bottle rack for the storage of bottles comprising shelves provided on one side with adjacent grooves extending transversely to the direction of the length of the shelves for receiving said bottles, the grooves extending completely across the shelves, and with spacing members arranged between the shelves, each spacing member being constructed at one end in a manner such that the end concerned fits in at least one groove, the grooves being separated from one another by at least substantially horizontal boundary faces of the shelf extending in the direction of width of said shelf, the bottom end of a spacing member being constructed so that it can bear in at least one groove and on parts of the shelf located on both sides of the groove, and the lower end of a spacing member being provided with two protruding noses fitting in two neighboring grooves.

4,485,931

CENTRAL BUFFER COUPLING FOR RAIL VEHICLES

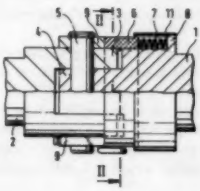
Hilmar Forster, Wolfenbuttel; Ernst Vahldiek, Beierstedt, and Dildar Arbab, Salzgitter, all of Fed. Rep. of Germany, assignors to Scharfenbergkupplung GmbH, Fed. Rep. of Germany

Filed Jan. 4, 1983, Ser. No. 455,485

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1982, 3213697

Int. Cl.³ B61G 5/02

U.S. Cl. 213—4 **4 Claims**



1. In combination with a rail vehicle frame and coupling head, a buffer coupling comprising a first coupling part connected to one of the frame and head and having a receiving shoulder adjacent one end thereof with a first cylindrical portion spaced from the one end having an increased diameter from said shoulder and forming a rib, a second cylindrical portion of smaller diameter than said rib forming a cylindrical slide surface, a sleeve slidably engaged on said slide surface, a second coupling part connected to the other of the frame and head and having a forked end with spaced apart legs engaged on respective sides of said shoulder, said legs and said shoulder having openings therethrough which align vertically, said second coupling part having an exterior cylindrical surface over which said sleeve engages, a vertical bolt extending through the vertically aligned openings and pivotally interconnecting said first and second coupling parts, spring means urging said sleeve in a direction to project from said slide surface of said first coupling part and to engage over the exterior of said second coupling part, and cam means carried by said second coupling part engageable with said sleeve to move it against said spring means beyond an end of said second coupling part to release said first and second coupling parts for pivoting.

4,485,932

CHILD RESISTANT PACKAGE

Maximillian Kusz, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 11, 1983, Ser. No. 512,838

Int. Cl.³ B65D 55/02

U.S. Cl. 215—222 **24 Claims**

1. A child resistant package comprising

an open-mouth container having a body with a circumferen-

tially spaced projection extending radially outwardly adjacent the open end thereof,

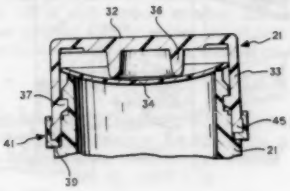
said projection having a downwardly facing locking notch,

a closure having a top panel and an annular skirt depending from the periphery of the top panel,

a plurality of radially inwardly extending and circumferentially spaced locking lugs on the inner surface of said skirt,

said locking lugs being adapted to engage the shoulder in the projection on the container,

means yieldingly urging the closure upwardly to cause a lug to remain in engagement with said notch when the closure is on the container,



a tamper-indicating member comprising an annular ring having portions extending between the lower edge of the skirt of the closure and a portion of the container and operable to normally limit axial movement of the closure,

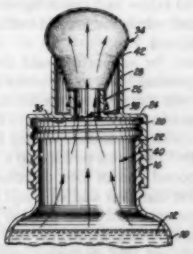
said container including a surface extending from the body of the container to a position adjacent the notch and being downwardly and outwardly inclined such that the closure can be applied to the container when the tamper-indicating member is in position through rotation of the closure causing a cam lug on the closure to engage and move on the inclined surface and flex the skirt of the closure outwardly to thereby direct the cam lug into engagement with the locking notch.

4,485,933

CLOSURE FOR RECEPTACLES CONTAINING A PRESSURIZED GAS

Donald J. Sykes, Upper Saddle River, N.J., assignor to Marpac Industries, Inc., Allendale, N.J.

Filed Nov. 4, 1983, Ser. No. 548,719
Int. Cl.³ B65D *53/00*
U.S. Cl. 215—250 **4 Claims**



1. An improved closure for a bottle or like receptacle containing a gas-emitting solution, the bottle having a neck portion including means for securing the closure thereto, the improved closure comprising:

(a) a first cylindrical portion including cooperative, securing means for securing the closure to the neck portion of the bottle;

(b) a disk member contiguous and perpendicular to said first cylindrical portion, said disk member including a centrally, disposed opening therethrough;

(c) a rupturable, seal member secured to said disk member and positioned over said centrally disposed opening;

(d) second cylindrical means fixedly secured to said disk member and centrally disposed about said opening in said disk member, said second cylindrical means perpendicular to said disk member and having at least a first open end; and,

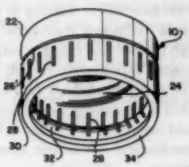
(e) a balloon-like member fixedly secured to an open end of said second cylindrical means, whereby the pressure created by the gas emitted from the solution eventually ruptures said seal member, fills said balloon and causes the latter to rupture, unless the pressure is otherwise relieved.

4,485,934

TAMPERPROOF CLOSURE

Daniel J. Maguire, P.O. Box 113, Flourtown, Pa. 19031

Filed Mar. 24, 1983, Ser. No. 478,209
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—252 **12 Claims**



1. A tamperproof closure for securing to the nozzle of a container of the type having a threaded nozzle and a circular transfer bead comprising

a circular top and cylindrical sidewalls depending therefrom, the sidewalls having an interior surface;

a bottom extension extending from the sidewalls, the bottom extension having an exterior cylindrical surface and an interior surface,

the bottom extension being provided with an internal, circular groove, the outer diameter of the groove being less than the outer diameter of the bottom extension exterior cylindrical surface,

the groove of the bottom extension being adapted for frictional engagement over the transfer bead of the nozzle;

a circular weakened seam defining the bottom extension from the said cylindrical sidewalls; and

an internal thread formed in the closure and extending continuously along the interior surface of the sidewalls and the interior surface of the bottom extension,

whereby the strength of the frictional engagement between the closure circular groove and the nozzle transfer bead is greater than the strength of the closure at the said weakened seam so that when the closure is removed from the nozzle for container opening purposes, the closure will separate along the weakened seam and the bottom extension will remain affixed to the transfer bead of the nozzle.

4,485,935

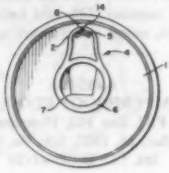
EASY-OPEN STRUCTURE FOR CONTAINERS AND METHOD OF FORMING THE SAME

Hans F. Stoffel, Rye, N.Y., assignor to Stoffel Technologies, Inc., Tuckahoe, N.Y.

Filed Dec. 8, 1982, Ser. No. 448,037
Int. Cl.³ F23Q *7/22*
U.S. Cl. 220—270 **40 Claims**

17. An easy-open structure for containers comprising a sheet material wall panel having a scoreline formed therein outlining a movable wall portion to be moved out of conforming con-

tour with the remainder of the wall panel, and a tab opener for moving the movable wall portion out of conforming contour with the remainder of the wall panel, said tab opener being welded to said movable wall portion along an elongated weld area formed by high energy density laser welding wherein the energy density is at least on the order of 10^6 watts per square inch, wherein said tab opener is elongated with one end thereof serving as a handle for moving the movable wall portion out of conforming contour with the remainder of the sheet material wall panel and the other end of said tab opener serving as a



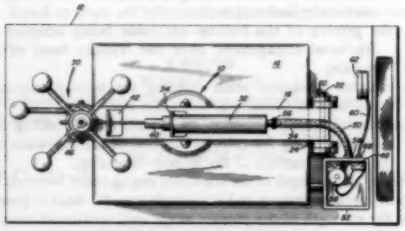
working end which is positioned over and extends along the portion of the scoreline where tearing is to be initiated, said elongated weld area extending transverse to the longitudinal direction of the tab opener and being positioned along said tab opener in close spaced relationship to said working end and to said portion of the scoreline where tearing is to be initiated, said elongated weld area serving as a fulcrum when tearing is initiated along said scoreline by Class 1 lever action with a relatively high mechanical advantage upon lifting the handle end of the tab opener.

4,485,936

PRESSURE VESSEL INTERLOCK

Richard J. Pardo, 1519 Chesaco Ave., Baltimore, Md. 21237, and Warren A. Pardo, 311 Red Pump Rd., Bel Air, Md. 21014

Filed Apr. 12, 1983, Ser. No. 484,376
Int. Cl.³ B65D *45/00*
U.S. Cl. 220—316 **12 Claims**



1. In an apparatus for securing a lid of a pressure vessel over an opening thereof including a latching mechanism for holding the lid in a secured position over said opening, the improvement comprising safety interlock means carried on the apparatus in opposing relation to the latching mechanism for inhibiting lid-releasing operation of the latching mechanism during the existence of hazardous pressure conditions within the pressure vessel;

electrical power means associated with the apparatus and electrically connected to the safety interlock means for operating the safety interlock means; and,

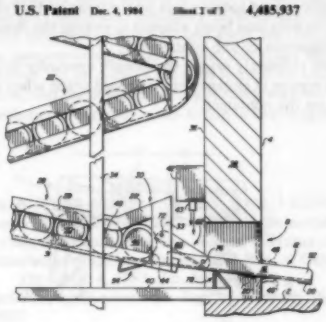
means associated with the safety interlock means for positively locking the latching mechanism against release of the lid when power from the electrical power means to the safety interlock means is discontinued.

4,485,937

CAN DISPENSING APPARATUS

Morgan A. Adams, 1501 N. 35th Ave., Phoenix, Ariz. 85009

Filed Apr. 22, 1982, Ser. No. 370,940
Int. Cl.³ B65G *59/06*
U.S. Cl. 221—129 **11 Claims**



1. An apparatus for selectively dispensing cylindrical cans individually from a supply of such cans, comprising in combination:

a. storage means for storing a plurality of cans, said storage means having a discharge end and including a lowermost storage conveyance inclined downwardly toward said discharge end for conveying said plurality of stored cans thereto, said storage means causing those of said plurality of stored cans proximate said discharge end to be serially aligned, said serially aligned cans proximate said discharge end including, at any particular time, a first can closest to said discharge end and a second can disposed immediately behind said first can;

b. a stop secured to said discharge end for engaging said first can to prevent said serially aligned cans proximate said discharge end from freely falling therefrom;

c. a dispensing lever having first and second ends and including a ramp portion therebetween inclined downwardly toward the first end of said dispensing lever for delivering a dispensed can thereto, the second end of said dispensing lever including a camming surface disposed generally behind said stop for engaging said first can and raising said first can above and over said stop when the second end of said dispensing lever is raised, the second end of said dispensing lever further including a catch disposed generally behind and below said camming surface for engaging said second can when the second end of said dispensing lever is raised; and

d. support means for supporting said dispensing lever to allow said dispensing lever to be turned relative to the first and second ends thereof about a lateral axis whereupon the application of a downward force to the first end of said dispensing lever causes said dispensing lever to turn about said lateral axis from a rest position to a raised position for raising the second end of said dispensing lever, in turn raising said first can over said stop and allowing said first can to advance onto said ramp portion of said dispensing lever while preventing substantial advancement of said second can toward said discharge end through engagement of said catch with said second can, and whereupon the removal of said downward force allows said dispensing lever to return from the raised position toward the rest position, thereby terminating the engagement between said catch and the second can and allowing said second can to advance toward said stop, said support means including:

i. linkage means having an upper end pivotally secured to said discharge end at a first pivot point and having an

opposing lower end pivotally secured to said dispensing lever at a second pivot point;

ii. a support means secured to said discharge end for supporting the second end of said dispensing lever when said dispensing lever is at said rest position;

iii. a fulcrum for engaging the underside of said dispensing lever between said second pivot point and the first end of said dispensing lever, said lateral axis about which said dispensing lever turns being coincident with the point of engagement between said fulcrum and the underside of said dispensing lever; and

iv. the application of a downward force to the first end of said dispensing lever turning said dispensing lever about said fulcrum to raise the second end of said dispensing lever off of said support member, and said linkage means guiding turning movement of said dispensing lever between said rest position and said raised position.

4,485,938

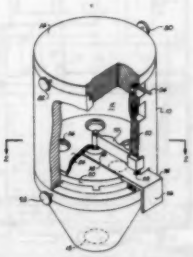
TAMPERPROOF PILL DISPENSING APPARATUS

Marvin D. Williams, 37 Sherman La., Greenville, S.C. 29605

Filed Mar. 21, 1983, Ser. No. 476,921

Int. Cl.³ A47F *1/10*

U.S. Cl. 221—154 **15 Claims**



1. Tamperproof apparatus for the dispensing of medicinal and health tablets and the like having an operation which is impeded by an infant or young child comprising:

a housing having a reservoir for containing said tablets having an open end and a discharge end;

a lid closure for closing said open end of said housing;

said discharge end of said housing including a discharge outlet;

a stationary dispensing plate carried by said housing across said discharge outlet;

said dispensing plate having a first dispensing opening formed therein for dispensing of a tablet into said discharge outlet;

a rotatable dispensing wheel carried above said dispensing plate having a plurality of tablet openings formed therein which are circumferentially spaced around a periphery of said dispensing wheel to be in individual alignment with said first dispensing opening of said dispensing plate as said dispensing wheel is rotated;

an indexing groove formed in a bottom of said dispensing wheel facing said dispensing plate;

a dispensing latch slidably carried by said dispensing plate;

a second dispensing opening formed in said dispensing latch which is brought into alignment with said first dispensing opening and said tablet opening when said dispensing latch is moved to a dispense position for dispensing a tablet;

guide means carried by said dispensing plate for guiding said dispensing latch in reciprocal linear motion;

a follower pin carried by said dispensing latch received in said indexing groove of said dispensing wheel;

said follower pin and indexing groove rotating and indexing said dispensing wheel in response to movement of said dispensing latch so that one of said tablet openings is in said alignment with said first dispensing opening upon full extension of said dispensing latch to said dispense position wherein it is fully distended in a straight line motion away from said housing;

said tablet opening, said second dispensing opening, said first dispensing opening, and said discharge outlet being aligned with one another so that a tablet carried in said tablet opening passes from said reservoir through said aligned openings and outwardly through said discharge outlet when said dispensing latch is moved to said dispense position;

said dispensing latch having a normal position in which said follower pin is disposed in said groove at a start position of said indexing groove; movement of said dispensing latch from said dispense position to said normal position causing said dispensing wheel to remain substantially idle in said aligned position;

first safety means locking said dispensing latch in said normal position preventing movement of said dispensing latch to said dispense position;

manual means for releasing said safety means when actuated;

said safety means including automatic engagement means for automatically locking said dispensing latch in said normal position upon return of said dispensing latch to said normal position following dispensing of a tablet; and

said safety means permitting operation of said dispensing latch and movement to said dispense position only upon actuation of said manual means simultaneously with operation of said dispensing latch.

4,485,939

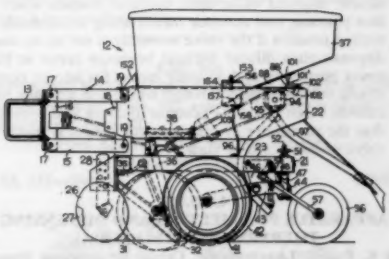
PLANTER SEED HOPPER WITH OPTIONAL CHEMICAL COMPARTMENTS

Alexander T. Gafford, and David L. Murray, both of LaPorte, Ind., assignors to Allis-Chalmers Corp., Milwaukee, Wis.

Filed Sep. 29, 1982, Ser. No. 426,984

Int. Cl.³ A01C *7/06*

U.S. Cl. 222—129 **11 Claims**



1. In an agricultural planter including a frame and a seed dispensing mechanism mounted on the frame, the combination comprising:

a pivot part on said frame adapted for connection to a draft appliance on a transverse pivot axis,

a hopper pivotally connected to said frame on said axis for vertical swinging movement between raised and lowered positions, said hopper having upstanding front, rear and side walls whose upper edges define a vertically open upper end permitting filling of the hopper and a bottom wall connected to said side and rear walls and sloping downwardly from the rear wall to a vertically open seed dispensing opening adjacent the front wall directly above and in feeding relation to said dispensing mechanism,

said side and bottom walls being adapted to receive a transverse partition wall dividing said hopper into front and rear compartments,

wall means in said bottom wall defining at least one outlet

for dispensing the contents of said rear compartment when said transverse partition wall is installed, and

said bottom wall having a sufficient rear to front downward incline to induce gravitational flow of seed from said rear compartment to said seed dispensing opening when said transverse partition wall is not installed.

4,485,940

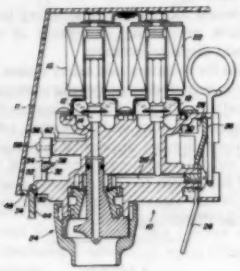
DILUENT VALVE ACTUATOR ASSEMBLY FOR BEVERAGE DISPENSERS

Wade R. Brown, St. Charles, Ill., assignor to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 343,560, Jan. 28, 1982, abandoned. This application Jul. 21, 1983, Ser. No. 516,138

Int. Cl.³ B67D *5/56*

U.S. Cl. 222—129.1 **2 Claims**



1. In a valve assembly for a beverage dispenser of the type wherein a diluent and a beverage syrup are mixed to provide a beverage upon simultaneous operation of a diluent solenoid valve and a beverage syrup solenoid valve; an improved actuator assembly for dispensing plain diluent without beverage syrup comprising:

an actuator means for actuating a switch to operate only the diluent solenoid valve upon operator contact when in a first position, said actuator means being positionable in a second position if the valve assembly is not to be used to dispense plain diluent without beverage syrup so that a cover portion of said actuator means fits into an opening of said valve assembly through which said actuator means extends when in its first position to cover said opening so that the remainder of said actuator means is inside said valve assembly out of view.

4,485,941

APPARATUS FOR MELTING AND DISPENSING THERMOPLASTIC MATERIAL

Paul S. Frates, Lawrenceville; Calvin R. Jameson; Peter J. Petrecca, both of Atlanta, and Charles H. Scholl, Duluth, all of Ga., assignors to Nordson Corporation, Amherst, Ohio

Filed Sep. 14, 1981, Ser. No. 301,523

Int. Cl.³ B67D *5/62*

U.S. Cl. 222—146.5 **10 Claims**

1. Apparatus for melting solid thermoplastic material and for supplying the molten thermoplastic material to a dispenser, said apparatus comprising

a melter tank, said tank including a bottom wall and side walls extending upwardly from said bottom wall and electrical resistance heating means mounted within said bottom wall of said melter tank,

pump mounting means on the top of said tank for mounting a pump from the top of said melter tank with its pump inlet located within said melter tank,

a rotary gear pump,

said rotary gear pump having a flange secured to said pump mounting means on the top of said tank,

said rotary gear pump including a circulating valve, said circulating valve being operable to return to the melter tank all flow from said rotary gear pump which exceeds the flow requirements of said dispenser, and

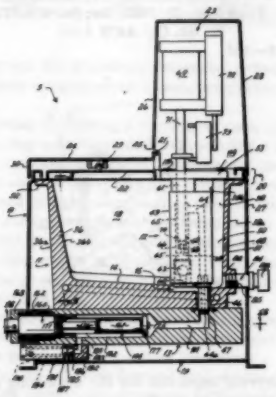
said circulating valve including a flange secured to the top of said flange of said rotary gear pump so as to enable said circulating valve to be removed from said pump mounting means along with said rotary gear pump or to be removed from said rotary gear pump while said rotary gear pump remains attached to said pump mounting means.

8. Apparatus for melting solid thermoplastic material and for supplying the molten thermoplastic material to a dispenser; said apparatus comprising

a melter tank, said tank including a bottom wall and side walls extending upwardly from said bottom wall and an electrical resistance heating means mounted within said bottom wall of said melter tank,

a pump,

means for mounting said pump with the pump inlet located within said melter tank,



a manifold block,

conduit means contained within said manifold block for receiving molten thermoplastic material from said pump and for transmitting it to said dispenser,

said conduit means including a filter chamber open to the exterior of said manifold block, a section of said filter chamber being internally threaded,

an adapter plug having external threads formed on its opposite ends, the external threads on one end being threaded into said internal threads of said filter chamber, said adapter plug having an axial bore extending therethrough, and

a removable filter cartridge including a filter screen mounted within said filter chamber of said manifold block, said filter cartridge including a filter plug having an internally threaded section threaded over the external threads on the opposite end of said adapter plug.

4,485,942

APPARATUS FOR MELTING AND DISPENSING THERMOPLASTIC MATERIAL

Peter J. Petrecca, Atlanta, Ga., assignor to Nordson Corporation, Amherst, Ohio

Filed Sep. 14, 1981, Ser. No. 301,600

Int. Cl.³ B67D *5/62*

U.S. Cl. 222—146.5 **4 Claims**

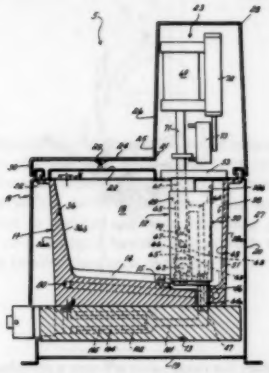
1. Apparatus for melting solid thermoplastic material and for supplying the molten thermoplastic material to a dispenser, said apparatus including a melter tank, said tank comprising

a bottom wall and four side walls extending upwardly from said bottom wall,

each of said side walls being generally triangular in cross sectional configuration with the base of each of said triangular cross sectional side walls being of greater thickness than the upper edges such that said side walls act as effective heat conductive fins for transferring heat upwardly from the base of said side walls, and

a single continuous length of electrical resistance heating means mounted within said bottom wall, a portion of said electrical resistance heating means being located beneath each of said side wall, and the length of electrical resistance heating means mounted within any one portion of said bottom wall being generally proportioned to the mass of said melter tank including the side walls and adhesive required to be heated by said length of electrical resistance heating means mounted within said one portion,

a manifold block attached to the bottom exterior surface of said melter tank,



conduit means contained within said manifold block for receiving molten material from said melter tank and transmitting it to said dispenser,

said manifold block being in heat transfer contact with a substantial area of said exterior wall of said melter tank, the heat transferred from said melter tank into said manifold block being the sole source of heat within said manifold block for maintaining molten material contained within said manifold block conduit means in the molten state,

a substantial portion of said conduit means of said manifold block extending parallel to and being located directly beneath a portion of said electrical resistance heating means,

a pump located within said melter tank, said pump being operative to supply molten material under pressure from said melter tank to said manifold block, and

said electrical resistance heating means being the sole external source of heat to said pump for maintaining molten contained within said pump in the molten state.

4,485,943

DISPENSER FOR LIQUIDS OR PASTY PRODUCTS

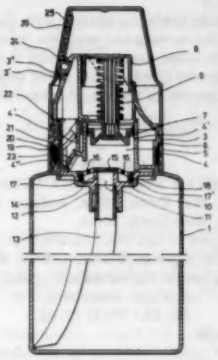
Joachim Czech, Jahnstrasse 19,, D-8405 Donaustauf, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 355,682

Int. Cl.³ B67D *5/52*; G01F *11/00*

U.S. Cl. 222—256 **10 Claims**

1. A dispenser for a liquid or pasty product comprising: a container (26) for containing said product, a piston (27) in sliding contact with the interior wall surface of said container for sealingly closing an opening at the lower end of said container, a partition (28) for closing the upper end of said container, said partition being formed with a downwardly extending cup-shaped recess (28″) having a lateral wall and a bottom wall, a plurality of openings (34) formed in said lateral wall, an upwardly projecting pin (30) provided on said bottom wall of said recess, a head piece (3) provided with an applicator (3′) having an outlet (3″) and forming together with said partition a pump chamber (5), the volume of said pump chamber being adapted to be varied by exterior actuation, check valve means (23) located bebetween said pump chamber and said outlet and adapted to open only towards said outlet, and a first check valve located between said pump chamber and said container



and adapted to open only towards said pump chamber, said first check valve comprising: a sleeve-shaped retainer element (37) disposed on said upwardly projecting pin, at least one resilient arm (36) connected at one end to said retainer element, and an annular cover member 35 arranged concentrically around said retainer element and connected to the other end of said resilient arm, said annular cover member having circumferentially extending upper and lower edges to engage said lateral wall of said recess above and below said openings, respectively to cover said openings when said annular cover member is in closed position.

4,485,944

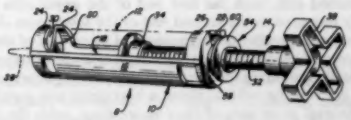
DISPENSER WITH QUICK-RELEASE DRIVE SCREW

Arthur H. Eichholz, Polo, Ill., assignor to Central Quality Industries, Inc., Polo, Ill.

Filed Apr. 27, 1982, Ser. No. 372,108

Int. Cl.³ B65D *83/00*

U.S. Cl. 222—390 **6 Claims**



1. A screw-actuated dispenser comprising:

a receptacle for a cartridge comprising an elongate body made at least partially from a resilient material for accommodating a cartridge and front and rear walls at opposing ends of the body between which the cartridge is confined;

an elongate drive screw with threads along its length and a pressure plate adjacent the front end of the drive screw for engagement with an end of the cartridge;

a handle secured adjacent the rearward edge of the drive screw for actuating the drive screw;

an opening in said rear wall within which said drive screw is received;

threads within said opening matable with the threads on said

elongate drive screw, said drive screw selectively advanced within or retracted from said opening and relative to the length of the receptacle by rotation;

a slot extending lengthwise of the body and joining with said opening in the rear wall;

wedge means fixedly located in the slot between the front and rear walls and deforming the body so as to widen said slot and in turn enlarge said opening such that the threads within the opening are biasably urged away from the threads on the drive screw;

second means extending rearwardly from said rear wall and having a slot portion connecting with the opening in the rear wall; and

clamp means selectively engageable with the second means to constrict the opening and bring the threads on the drive screw into intimate engagement with the threads in the opening, whereby quick-release of the drive screw can be effected by removing the clamp means from the second means.

4,485,945

VEHICLE SPARE TIRE CARRIER

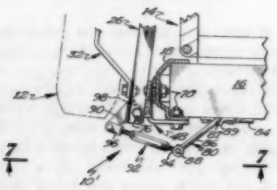
V. Scott Ankeny, Blue Earth, Minn., assignor to Tafco Equipment Company, Blue Earth, Minn.

Continuation-in-part of Ser. No. 325,478, Nov. 27, 1981, Pat. No. 4,418,851. This application Mar. 4, 1983, Ser. No. 471,984

The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.

Int. Cl.³ B62D *43/02*

U.S. Cl. 224—42.06 **20 Claims**



1. A spare tire carrier for a vehicle having a frame and a body attached thereto, with the frame including a bumper attached thereto and with the body including a closure door pivotally mounted about a horizontal pivot axis from a first, vertical, closed position to a second, horizontal, open position comprising, in combination: a lower arm having a first end and a second end; means for mounting the spare tire to the lower arm; a lower pivot member attached to the bumper of the vehicle for pivotally mounting the first end of the lower arm to the vehicle about a horizontal axis parallel to the horizontal pivot axis of the closure door; an upper arm having a first end and a second end, with the first end of the upper arm being pivotally mounted to the second end of the lower arm about a horizontal axis parallel to the horizontal pivot axis of the closure door; an upper pivot member attached to the closure door for pivotally mounting the second end of the upper arm to the closure door of the vehicle about a horizontal axis parallel to the horizontal pivot axis of the closure door, with the lower and upper pivot members and the upper arm allowing the simultaneous pivoting of the lower arm with the closure door of the vehicle from a first, generally vertical position to a second, generally horizontal position, with the lower pivot member including a first surface for abutting with the lower arm in its first, generally vertical position for preventing movement of the lower arm therebeyond and for enhancing the weight transfer of the spare tire to the lower pivot member and including a second abutting surface for abutting with the lower arm in its second, generally horizontal position for preventing movement of the lower arm therebeyond and for transferring counterforces from the lower arm to the lower pivot member; a torsion bar for biasing the lower arm with respect to the lower pivot member for assisting the pivoting of the lower arm between its first position and its second position, with the torsion bar being mounted to the vehicle having at least a first end anchored against rotation and including a lever arm for placing a torsional force on the torsion bar; and means for mechanically connecting the lower arm to the lever arm of the torsion bar for causing the lever arm to place a torsional force on the torsion bar as the lower arm is pivoted from its first, generally vertical position to its second, generally horizontal position.

4,485,946

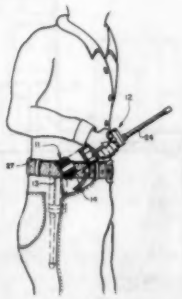
BELT HOLDER FOR PORTABLE RADIO APPARATUS

James P. Liautaud, River and Bluff Rds., Trout Valley, Cary, Ill. 60013; Peter F. Stultz, Elgin, and David L. Maloney, Barrington, both of Ill., assignors to James P. Liautaud, Elgin, Ill.

Filed Sep. 6, 1983, Ser. No. 529,856

Int. Cl.³ A45F *5/02*

U.S. Cl. 224—242 **14 Claims**



1. A belt holder for detachably affixing a portable apparatus to a wearer's belt comprising:

a belt fastener secured to the belt;

a receptacle housing pivotally attached to said belt fastener;

clamp means within said receptacle housing for detachably engaging the apparatus in said receptacle housing; and

actuator means for conditioning said clamp means from a clamped to an unclamped condition upon said receptacle housing being rotated relative to said belt fastener to allow removal of the apparatus from said receptacle.

4,485,947

HANDGUN HOLSTER WITH CONTRACTIVE SHAPE MEMORY

Clifton L. Cook, Boise, Id., assignor to Michaels of Oregon Co., Portland, Oreg.

Filed Sep. 28, 1982, Ser. No. 425,423

Int. Cl.³ F41C *33/02*

U.S. Cl. 224—243 **8 Claims**

1. A universal-type, sandwich-construction, mar-inhibiting, protective holster for accommodating, snugly under all use circumstances, and at different selected times, different handguns having different sizes which reside within a defined range of sizes, said holster comprising:

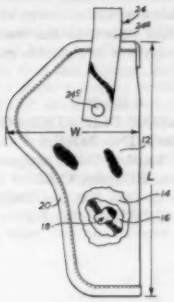
a relaxed-shaped memory web taking the form generally of a yieldably firm elastomer defining a central, folded, contracted-shape memory-retentive layer in the holster,

a liner web, taking the form generally of a soft-surfaced fabric joined to, and substantially coextensive with the inside face of, said memory web, and defining a pliable, folded, non-abrasive, inside handgun-contacting layer in the holster, and

a shell web taking the form generally of a relatively stiff, tear-and-abrasion-resistant fabric, joined to, and substan-

tially coextensive with the outside face of, said memory web, and defining a pliable, folded, wear-resistant, outer protective surface in the holster,

said three webs having their respective confronting faces bonded by adhesive, said three webs collectively forming a handgun-receiving pocket bounded directly by said liner web, and reversibly deformable to receive, and to grasp



snugly, by virtue of deformation in said memory web, any handgun characterized by such defined range of sizes, with prior snug receipt and grasping of a handgun having one size within such range of any time interval, being ineffective to prevent any later, like, snug grasping and receipt of a handgun having, within such range, a size which is smaller than such one size.

4,485,948

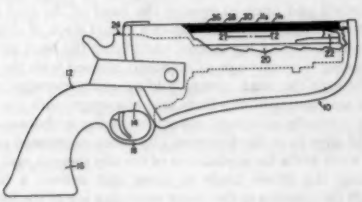
HAND GUN HOLSTER WITH ABRASION-RESISTANT LONGITUDINAL SPINE

Clifton L. Cook, Boise, Id., assignor to Michaels of Oregon Co., Portland, Oreg.

Filed Jun. 30, 1983, Ser. No. 509,323

Int. Cl.³ F41C *33/02*

U.S. Cl. 224—243 **3 Claims**



1. In an improved fabric-lined handgun holster, having a fold defining a longitudinal spine in the holster and a gun-receiving opening, the improvement comprising

a flexible, elongated, web-like spine structure in the form of a ribbon, and

means securing said spine structure at least along a major portion of the inside of the holster spine, extending from the opening in the holster, to provide abrasion protection for the spinal portion of the fabric lining in the holster.

4,485,949

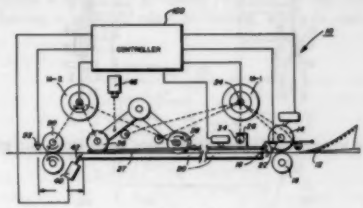
CONTROLLED FRICTIONAL FEEDING OF COMPUTER FORMS WEB

Steven A. Gebhart, Rochester, and Randolph Parks, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 23, 1982, Ser. No. 410,734

Int. Cl.³ B65H *23/00*; G03G *15/10*

U.S. Cl. 226—2 **15 Claims**



1. A document feeding method for frictionally feeding computer forms web having sprocket holes, independent of the sprocket holes, to the imaging station of a copier for copying compatibly with individual document sheet feeding, comprising the steps of:

automatically determining whether a computer forms web or an individual document sheet is being fed to said imaging station;

in response to a determination that a computer forms web is being so fed, automatically frictionally feeding the computer forms web incrementally in selected incremental lengths to said imaging station by controlling a controllable frictional non-sprocket drive system;

sensing and accumulating first signals corresponding to the movement of said controllable frictional drive system;

sensing and accumulating second signals corresponding to the number and position of sprocket holes in the computer forms web being so frictionally fed, including validating sensed holes as being sprocket holes; and

compensating for slip in said frictional feeding of the computer forms web by comparing said first and second signals to maintain registered stopping positions for said controllable drive system for said selected incremental lengths of computer forms web feeding to provide registration of said incremental lengths of computer forms web to said imaging station.

4,485,950

EXCHANGEABLE TRANSPORTATION DEVICE FOR MARGINALLY PERFORATED DATA CARRIERS

Peter Kuelzer, Hochstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 7, 1982, Ser. No. 447,682

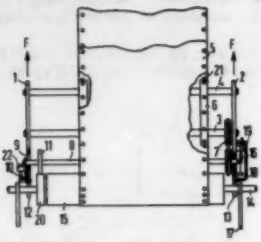
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1981, 3149997

Int. Cl.³ G03B *1/30*

U.S. Cl. 226—74 **10 Claims**

4. A transport device for roller platen equipped printers comprising first and second spaced side plates, said side plates having bottom end portions having guide slots receiving an axis of the platen, a drive shaft carried between said side plates, said drive shaft moveable with respect to at least one of said side plates, inter-engaging drive members on said drive shaft and said platen axis, spring means acting between said drive shaft and said first side plate effective to urge said inter-engag-

ing drive means against one another and to bias said first side plate away from said platen axis and second spring means



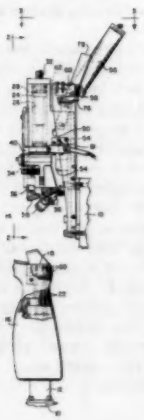
effective to urge said second side plate away from said platen axis.

4,485,951

HEEL ATTACHING MACHINE

Raymond M. Bowler, Salem, N.H., assignor to Bush Universal, Inc., Woburn, Mass.

Filed Apr. 15, 1982, Ser. No. 368,566
Int. Cl.³ A43D *79/00*
U.S. Cl. 227—7 **7 Claims**



1. In a heel attaching machine, the improvement comprising, in combination:

a stationary nailing die for supporting in a predetermined position a shoe or boot to which a heel is to be attached, said nailing die having a plurality of nail passages arranged to guide nails toward and into said shoe or boot;

nail driver means for driving nails through the passages into said shoe or boot;

a heel holddown mechanism having a heel holddown engageable with a heel thereby to provide a back-up holddown force for the heel to resist the force of nails driven into said heel by the nail driver means;

means mounting the heel holddown mechanism for movement in its entirety between an operating position in proximity to the nailing die and a remote position in which said holddown mechanism is incapable of providing said back-up hold down force;

drive means for moving the heel holddown mechanism between said operable and remote positions;

said heel holddown mechanism including a holddown member moveable toward and away from the nailing die between clamping and unclamped positions when said holddown mechanism is in said operable position;

said heel holddown mechanism including second drive means for moving said holddown member between said clamped and unclamped positions;

means for maintaining the heel holddown mechanism in its operable position at least during the holddown and nailing portion cycles of operation of the machine; and

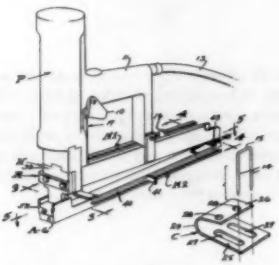
control means further comprising means for selectively causing the first drive means to return to its remote position after the nailing operation has been completed or, alternatively, to remain in its operable position.

4,485,952

SHIFTABLE MAGAZINE CLIP FEED FOR FASTENER DRIVING TOOLS

Charles W. Weis, Los Angeles, Calif., assignor to Power-Line Fastener Systems, Inc., ElMonte, Calif.

Filed Jun. 3, 1982, Ser. No. 384,195
Int. Cl.³ B25C *1/04, 5/16*
U.S. Cl. 227—7 **40 Claims**



1. A tool for the application of a clip to a work piece by means of a fastener, the clip being of U-shape with a rearwardly extending lower mounting leg of greater length than an overlying upper leg for vertical exposure of an opening through the lower mounting leg for receiving the fastener, and including in combination; a first fastener magazine means carried by the tool and the tool having a driveway through a head projecting to a driving plane offset from said first fastener magazine means and through which driveway a driver blade reciprocates to sever a fastener from a supply thereof advanced by said first fastener magazine means and to deliver the same through said driving plane and into the work piece, and a second work piece engageable clip magazine means shiftably carried beneath the first fastener magazine means and extending beneath and open to receive the head of the tool and to sequentially stop a foremost clip of a nested stack of clips with the lower mounting leg thereof underlying the head and with the opening therethrough substantially aligned with the driveway through the head, means holding and preventing retraction of said foremost clip from said alignment with the driveway, a normally advanced retraction means withdrawing the stack of clips from the foremost clip when positioned relative to the work piece for application of the clip thereto, and means operating the driver blade to sever and deliver a fastener through the opening in the lower mounting leg of the foremost clip and fastening the same onto the work piece.

4,485,953

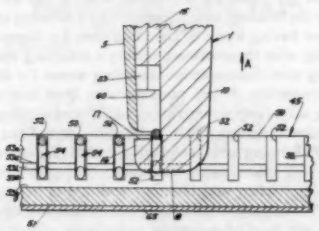
SURGICAL STAPLING INSTRUMENT AND CARTRIDGE THEREFOR

Robert G. Rothfuss, Bellevue, Ky., assignor to Senco Products, Inc., Cincinnati, Ohio

Filed Apr. 5, 1982, Ser. No. 365,544
Int. Cl.³ A61B *17/04*
U.S. Cl. 227—19 **28 Claims**

1. A surgical stapling system comprising a surgical stapling

instrument and a separate surgical staple-carrying cartridge therefore, said instrument being pliers-like and having upper and lower handles, said upper handle having at its forward end a body portion terminating in an elongated downwardly depending nose portion, said nose portion terminating at its lower end in a forwardly extending anvil having an upper surface comprising an anvil surface, said nose and body portions of said upper handle having coplanar forward surfaces, a staple former being removably and slidably mounted on said forward surfaces above said anvil surface, said lower handle having a forward end, said lower handle being pivotally connected near its forward end to said body portion of said upper handle, said forward end of said lower handle being operatively connected to said former to shift said former from a normal retracted position through a staple engaging position to a staple forming position adjacent said anvil surface when said lower handle is shifted from its normal position toward said upper handle, and to shift said former from its staple forming position to is normal retracted position when said lower handle is shifted away from said upper handle to its normal position, and means biasing said lower handle and said former to their normal positions, said staple carrying cartridge comprising a one-piece, elongated member having sides, top and bottom surfaces and ends, a



plurality of slots formed in said top surface of said cartridge and extending vertically downwardly thereform, said slots extending transversely of the long axis of said cartridge and being in parallel spaced relationship with respect to each other so as to form a row of said slots along the length of said cartridge, each slot terminating in vertical end surfaces and being so sized as to receive a surgical staple therein of the type having a crown terminating in downwardly depending legs, with said vertical end surfaces of said slot frictionally engaging said downwardly depending staple legs to maintain said staple within said slot, said cartridge having a longitudinal groove in said top surface, said longitudinal groove extending the full length of said cartridge and through said ends thereof, said groove intersecting each of said transverse slots, said longitudinal groove being so configured as to just nicely receive said nose portion of said surgical stapling instrument with said anvil surface below and said staple former above an endmost staple in said row of transverse slots, whereby upon partially shifting said staple former from said normal to said staple engaging position said staple will be engaged by said anvil surface and said former and slightly deformed to release the frictional engagement of said staple legs by said slot end enabling said staple to be withdrawn from said cartridge slot by said surgical stapling instrument.

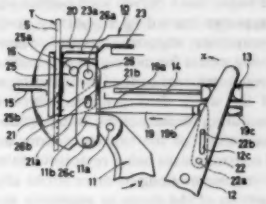
4,485,954

TAG ASSEMBLY FEEDING MECHANISM

Akira Furutsu, Tokyo, Japan, assignor to Japan Bano'k Co., Ltd., Tokyo, Japan and Ben Clements & Sons, Inc., South Hackensack, N.J.

Filed Jun. 1, 1982, Ser. No. 384,117
Int. Cl.³ B25C *1/00*
U.S. Cl. 227—67 **5 Claims**

1. A tag attacher for dispensing tag pins from a tag assembly, each said tag pin including a head and a crossbar joined together by a filament, said tag pins being removably coupled to a connecting bar in sequence to form said tag assembly, comprising a body having a front end, a trigger pivotally coupled to said body, a grooved hollow needle removably secured in said front end of said body, said trigger being pivotally operable to drive a crossbar of a tag pin into said hollow needle, said body including a guide groove in said front end which receives and guides a connecting bar of a tag pin assembly, a cam plate disposed adjacent said guide groove, said cam plate being lifted to an upper position along said guide groove when said trigger is operated and lowered to a lower position when said trigger is released, a feed lever pivotably mounted on said cam plate and having a cutting edge projecting towards said guide



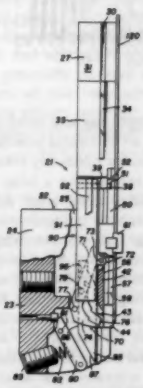
groove, a link having an upper portion pivotally coupled to said feed lever, and a pressing member coupled to said trigger adapted to engage with said link, said feed lever and link being lifted together to said upper position with said cam plate when said trigger is operated, said pressing member being moved into contact with said link, said link pivoting said feed lever so that the cutting edge of the feed lever is pressed into the connecting bar of the tag pin assembly, the feed lever being lowered together with the cam plate when said trigger is released to pull the connecting bar down so that the next tag pin in said assembly is moved into alignment with said grooved hollow needle for dispensing with the next operation of said trigger.

4,485,955

WIRE LOOP STITCHING MACHINE HEAD WITH CAM-CONTROLLED STAPLE SUPPORTER

Casper W. Hagemann, Racine, Wis., assignor to Interlake, Inc., Oak Brook, Ill.

Filed Jan. 12, 1983, Ser. No. 457,494
Int. Cl.³ B27F *7/21, 7/23, 7/26*
U.S. Cl. 227—89 **11 Claims**



1. In a wire loop stitching machine head including a staple bending means for bending a length of staple wire into a generally inverted U-shaped staple having a pair of substantially

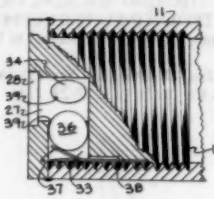
straight parallel legs interconnected by a substantially straight bight portion, staple driving means reciprocating along a drive stroke and a return stroke, the staple driving means being coupled to the bending means for movement thereof during an initial portion of the driving stroke for bending the staple wire, the staple driving means being decoupled from the bending means during a later portion of the driving stroke for driving the staple along a staple path to and through an associated workpiece, a staple supporter carried by the bending means and movable with respect thereto between a retracted position out of the staple path and a supporting position disposed in the staple path between the leg portions of the staple and cooperating with the staple driving means for deforming the bight portion of the staple into a curved loop portion and bias means urging the supporter toward its supporting position, the improvement comprising: supporter control means coupled to the staple driving means for movement therewith and coupled to the staple supporter, said control means being responsive to movement of the staple driving means with respect to the bending means during forming of the loop portion of the staple to prevent movement of the supporter from its supporting position, said control means being responsive to movement of the staple driving means along its drive stroke after formation of the loop portion of the staple to positively move the supporter toward the retracted position thereof and out of the staple path.

4,485,956

NAILING TOOL

Willem H. P. Van Iperen, Westfield, N.J., assignor to Sea-Land Industries, Inc., Elizabeth, N.J.

Filed Feb. 7, 1983, Ser. No. 464,339
Int. Cl.³ B25G *1/02*
U.S. Cl. 227—147 **3 Claims**



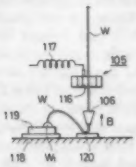
1. A nailing tool for supporting and driving a nail having a head thereon comprising; an elongated tubular sleeve member having one end with means for releasably retaining a nail to be driven and the opposite end having a hand grip thereon in spaced axial relation to said one end, a nail driving rod axially slidable in said elongated tubular guide sleeve member having a lower end for engaging said nail retaining means and an upper end extending beyond said hand grip on said guide sleeve member having a hand grip thereon, said nail retaining means being an anvil having an axial bore for cooperatively receiving a nail head therein, said anvil having a substantially planar driving rod impact surface on the face of the anvil opposite from said bore, and means in said axial bore for releasably engaging a nail head whereby upon axial displacement of said nail driving rod in said guide sleeve member and impact with said nail retaining means, a nail retained therein will be impacted and discharged from said retaining means after nailing.

4,485,957

WIRE BONDER

Tatsuo Sugimoto, Fuchu; Seiji Shigyo, Hitachi; Kazutoshi Takashima, Higashiyamato, and Yuichi Komaba, Kasukabe, all of Japan, assignors to Hitachi, Ltd. and Hitachi Ome Electronic Co., Ltd., both of Tokyo, Japan

Filed May 26, 1982, Ser. No. 382,105
Claims priority, application Japan, Jun. 22, 1981, 56-95351
Int. Cl.³ B23K *37/00*
U.S. Cl. 228—4.5 **6 Claims**



1. A wire bonder comprising:

a clamper for clamping a bonding wire in the vicinity of where the bonding wire is engaged by a bonding tool, said clamper having a pair of clamping arms for clamping said bonding wire therebetween during a clamping operation;

a bonding wire disconnection detecting menas for detecting a disconnection of said bonding wire from said clamper during said clamping operation, said disconnection detecting means including a pair of detecting units fixed on said pair of clamping arms, respectively, said pair of detecting units being spaced apart from each other with a predetermined gap when said bonding wire exists between said pair of clamping arms during said clamping operation, while said pair of detecting units come closer to each other than said predetermined gap when no said bonding wire exists between said clamping arms; and

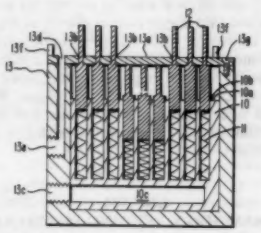
a detecting circuit for deriving an electrical signal from said pair of detecting units in response to the fact that said pair of detecting units have come closer to each other than said predetermined gap during said clamping operation.

4,485,958

TOOL FOR REMOVING SOLDERED IC PACKAGES

Zeev Lipkes, Solana Beach, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 25, 1983, Ser. No. 478,691
Int. Cl.³ B23K *1/00*; B23P *19/04*
U.S. Cl. 228—19 **12 Claims**



1. A tool for removing an integrated circuit package from a printed circuit board when said package has a plurality of I/O pins that protrude by unequal distances through via holes in said board and are soldered thereto; said tool comprising:

a block of heat-conducting material having a plurality of cylinder-shaped holes with axes that are perpendicular to one surface of said block;

a plurality of springs, each of which is disposed in a respective one of said holes to compress and expand in the direction of said axes;

a plurality of heat-conducting rods, each of which has one end that slides in a respective one of said holes parallel to said axes in response to the compressive force of the spring which lies therein;

an insulating container enclosing said block having a lid that is parallel to and spaced apart from said one surface of said block, said lid having a plurality of holes that are patterned the same as the I/O pins on said package;

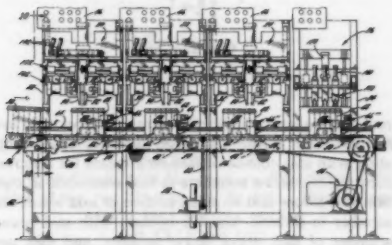
said rods being shaped such that the ends opposite to said one end move through the holes in said lid by distances that vary according to the degree by which said springs are compressed, so that said rods can contact all of said I/O pins in spite of the unequal distances by which they protrude through said board.

4,485,959

MEANS FOR WELDING INTERCELL CONNECTIONS

Daniel Orlando, New Berlin, Wis.; David L. Lund, Minneapolis, and Glenn R. Waber, St. Paul, both of Minn., assignors to GNB Batteries Inc., Mendota Heights, Minn.

Filed May 14, 1982, Ser. No. 378,277
Int. Cl.³ H01M *2/24*
U.S. Cl. 228—102 **22 Claims**



1. An apparatus for welding through-the-partition intercell connections in a lead-acid battery container having partitions dividing the container into a plurality of cells, each partition having a plurality of spaced apertures therein for making such intercell connections, and elements in each cell having spaced lugs abutting each aperture, said apparatus comprising:

(a) at least one welding station having a plurality of welding heads corresponding in number and spaced similarly to the apertures in a single partition;

(b) conveying means for moving battery containers through said welding station;

(c) aligning and retaining means for positioning a battery container in at least one predetermined position in said welding station relative to said welding heads;

(d) sensing means for determining the presence of a battery container at said predetermined position;

(e) means for moving the battery container and welding heads relative to each other at said station such that the heads are brought into adjacent relation to the lugs abutting the apertures in said single partition;

(f) said welding heads having means for welding the lugs abutting the apertures of the single partition through said apertures;

(g) master control means for controlling the means identified in subparagraphs (a) through (f) in accordance with a predetermined sequence; and

(h) slave control means at said welding station capable of receiving welding instructions from said master control means, operating said welding means pursuant to said instructions and signaling said master control means when welding has been completed.

21. A method for welding through-the-partition intercell connections in a lead-acid battery container having partitions dividing the container into a plurality of cells, each partition having at least two spaced apertures therein for making such intercell connections, and elements in each cell having spaced lugs abutting each aperture, said method comprising:

(a) providing at least one welding station having a plurality of welding heads corresponding in number to the number of apertures in a single partition of said battery container and being capable of welding lugs abutting the respective apertures of said single partition through said apertures;

(b) conveying a battery container to the welding station;

(c) aligning and retaining the battery container in at least one predetermined position in the welding station;

(d) sensing the presence of a battery container at said predetermined position;

(e) welding adjacent lugs together through each of the apertures of said single partition while said battery container is at said welding station;

(f) conveying said battery container away from said welding station following welding; and

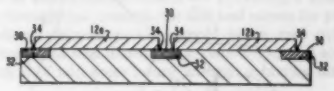
(g) controlling the steps identified in subparagraphs (a) through (f) in accordance with a predetermined sequence by a master control.

4,485,960

JOINT FOR JOINING CLAD MATERIALS

Stanley S. Sagan, Springfield, Pa., and Jay L. Kratz, Cherry Hill, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 27, 1982, Ser. No. 412,435
Int. Cl.³ B23K *20/08*
U.S. Cl. 228—107 **14 Claims**



1. A weldable-edge construction for a clad component, comprising:

a base member having a planar surface, a recess, and an edge portion;

a ribbon of cladding material having two generally parallel surfaces one of which is metallurgically bonded to said base member, said ribbon being disposed in said recess in said planar surface in such a way that the other of said surfaces of said ribbon is generally coplanar with said planar surface of said base member; and

a sheet of cladding material metallurgically bonded to said base member and said other surface of said ribbon, said sheet being generally parallel to and over laying said planar surface of said base member, and a preselected portion of said ribbon, whereby said edge portion of said sheet is recessed from one edge of said ribbon.

4,485,961

WELDING BY HOT ISOSTATIC PRESSING (HIP)

Ragnar Ekbom, Finspong, and Tore Garvare, Gammelstad, both of Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Mar. 25, 1983, Ser. No. 479,085
Claims priority, application Sweden, Mar. 29, 1982, 8201982
Int. Cl.³ B23K *20/00*; B22F *7/08*
U.S. Cl. 228—193 **12 Claims**

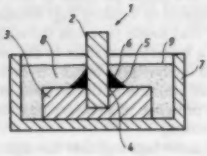
1. A method of joining together component parts of a composite element by hot isostatic pressing (HIP), which is characterised in that

the component parts are assembled so that surfaces thereof to be joined together are in contact at at least one joint,

in that a first layer of powder having substantially the same composition as the material of at least one of said component parts is applied over the said at least one joint,

in that a second layer of a glass powder is applied over the first powder layer

in that the assembled component parts and layers are heated so that the second layer of glass powder forms a gas-impermeable barrier over the first layer,



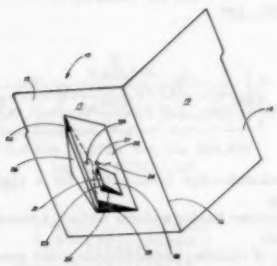
and in that the component parts and layers are subjected to an all-sided gas pressure at such an elevated temperature that diffusion bonding occurs at the said at least one joint between the component parts.

4,485,962

COMPARTMENTALIZED FILE FOLDER APPARATUS

Maryette K. Farley, 1908 Harvard Ave., Metairie, La. 70001

Filed Sep. 30, 1982, Ser. No. 431,342
Int. Cl.³ B65D *27/08*
U.S. Cl. 299—1.5 R **5 Claims**



1. A compartmentalized file folder, comprising:

a. first and second side portions, integrally attached to one another substantially along their length, and foldable along a common crease between opened and closed positions and defining inside and outside walls of said first and second side portions;

b. a first pocket attached to the inside of at least one of said side portions, said first pocket having at least one opening positioned distal said common crease; and

c. a second pocket mounted upon said first pocket, having an opening substantially perpendicular to said opening of said first pocket.

4,485,963

CUP WITH PIVOTING STRAW

Richard L. Panicci, Hanover, Mass., assignor to Kiddie Products, Inc., Avon, Mass.

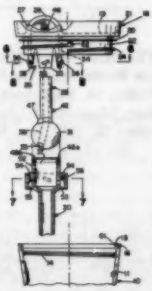
Filed Sep. 16, 1983, Ser. No. 532,956
Int. Cl.³ B65D *77/28*
U.S. Cl. 229—7 S **16 Claims**

1. A straw assembly for a drinking cup, said assembly comprising a cup cover adapted to sealingly close the top of a cup, and upper and lower tubular straw members, said assembly characterized in that:

said cover comprises a connector for sealingly connecting said upper and lower straw members, and said connector comprises a hollow, upwardly protruding, rounded dome having a first opening therethrough, and said connector further comprises a fastening means for connecting said lower straw member to said cover,

said upper straw member comprises a lower rounded segment contained within said dome and a hollow tubular segment extending outwardly from said rounded segment through said dome opening, said tubular segment being movable in said first opening through a number of positions, the inner passage defined by said hollow tubular segment communicating through a passage means within said rounded upper straw segment to a second opening on the outer surface of said rounded straw segment,

said lower straw member comprises an upper terminal surface configured to slidably and sealably engage said



rounded segment of said upper straw member, said lower straw member further comprises fastening means cooperating with said connector fastening means for removably securing said straw members to said connector in a position that forces said terminal surface of said lower straw member in slidable, sealable contact with said rounded segment of said upper straw member, and said upper terminal surface of said lower straw member comprises a third opening, in communication with the central passage of said lower straw member and in communication with said second opening in at least one of said positions of said tubular segment,

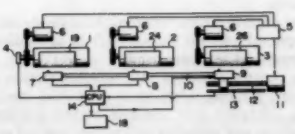
whereby said upper and lower straw member are maintained in slidable sealable contact as said tubular segment moves in said first opening.

4,485,964

METHOD OF IDENTIFYING A MULTIPLICITY OF SPECIAL POINTS

Mitsuhiko Yamada, and Isao Tokura, both of Kyoto, Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Apr. 12, 1983, Ser. No. 484,151
Claims priority, application Japan, Jun. 10, 1982, 57-101532
Int. Cl.³ G06K *1/00*
U.S. Cl. 234—2 **20 Claims**



1. A method of recording the addresses of a multiplicity of

special points in a pattern drawn on a sheet, comprising the steps of:

preparing a pattern sheet in which special points are each indicated by a substantially annular pattern having an optical density level different from that of the ground of the sheet and surrounding the special point;

preparing a mask sheet in which the special points are indicated by dots having an optical density level different from that of the ground of the sheet and dimensioned to be smaller than the outer perimeter of the corresponding annular pattern but to be greater than the inner perimeter of the same annular pattern;

mounting the pattern sheet on a first rotary drum and the mask sheet on a second rotary drum which may be photoelectrically scanned by a first light receiving head and a second light receiving head, respectively;

identifying the special points by the location of the light receiving heads at which only one of the light receiving heads detects an optical density level different from that of the ground of the corresponding sheet; and

recording the thus detected special points in recording means.

4,485,965

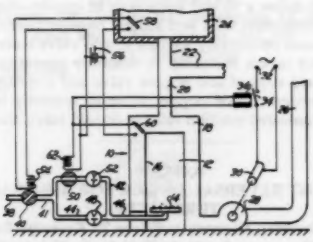
DUAL-RATE FUEL FLOW CONTROL SYSTEM FOR SPACE HEATER

George P. McGinnis, 3426 Hammerberg, Flint, Mich. 48507

Division of Ser. No. 229,970, Jan. 30, 1981,. This application May 9, 1983, Ser. No. 492,814

Int. Cl.[3] F24H *3/02*

U.S. Cl. 236—11 4 Claims



1. A method for improving the fuel efficiency of a space heating system wherein a heat transfer fluid is heated in a furnace provided with a fuel burner supplied in fuel from a main supply and a chamber is provided in said furnace for heating said heat transferfluid, said method comprising starting full flow of said fuel to said burner under the control of a thermostat disposed in a space to be heated, starting circulation of said heat transferfluid upon the temperature in said chamber reaching a first predetermined temperature, decreasing the flow of fuel to said burner simultaneously with starting the flow of said heat transfer fluid through said chamber for heating and delivery to the space to be heated, stopping the flow of fuel to said burner under the control of said thermostat, and stopping the flow of said heat transfer fluid upon the temperature in said chamber reaching a second predetermined temperature lower than said first predetermined temperature.

4,485,966

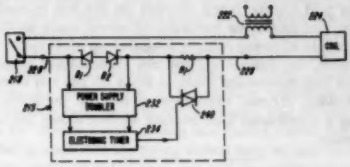
PULSATION DEVICE FOR A HEATING OR COOLING UNIT

Robert L. Cartmell, 2905 California, Dayton, Ohio 45419, and Cletus F. Berning, 5499 Woodbridge La., Dayton, Ohio 45429

Continuation-in-part of Ser. No. 221,000, Dec. 19, 1980, abandoned. This application Feb. 22, 1983, Ser. No. 468,080

Int. Cl.[3] F25B *19/00;* F23N *5/20*

U.S. Cl. 236—46 R 11 Claims



1. A pulsation device adapted for use in a circuit including a thermostatic switch connected in series with a low voltage alternating current power supply and a control unit for a heating or cooling system, said pulsation device comprising means connected in series with said thermostatic switch and said control unit for producing a direct current power supply substantially lower than said alternating current power supply, a pulsating switch connected to conduct a substantial portion of the current directed through said thermostatic switch and said control unit, timer means operated by said direct current power supply and programmed to open and close said pulsation switch according to corresponding predetermined time periods in response to operation of said timer means, and means connected to said pulsation switch for providing a small current flow through said control unit and said means for producing said direct current power supply when said pulsation switch is open and said thermostatic switch is closed to maintain operation of said timer means without actuating said control unit.

4,485,967

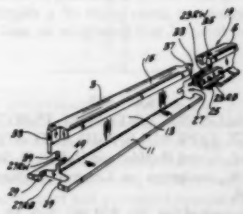
MECHANICAL JOINT

Lawrence K. Edwards, 3507 Slade Run Dr., Falls Church, Va. 22042

Filed Jul. 19, 1982, Ser. No. 399,443

Int. Cl.[3] E01B *11/32*

U.S. Cl. 238—226 5 Claims



1. A connection for connecting a pair of rail members, such as railway rail members, end to end, each rail member having a base, web, and a railhead, said connection comprising means connecting the bases of the rail members for allowing relative longitudinal movement of the rail members within a limited range of movement and for transmitting tension force along the rail members when they tend to move apart a distance greater than said range of movement, means connecting the ends of the railheads of the rail members comprising a tongue projecting endwise from the railhead of one rail member into a slot in the railhead of the other rail member, with the top of the tongue generally flush with the top of the railheads and the

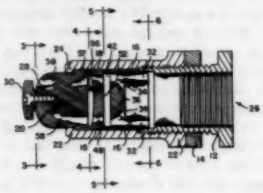
bottom of the tongue slidable on said other rail member for transmitting loads applied to the top of the railheads, said base connecting means comprising a longitudinally extending end projection on said other rail member slidable in a recess in said one rail member, said end projection having base and web portions constituted by extensions of the base and the lower part of the web of said other rail member, said end projection further having means engageable with said one rail member for limiting the extent of said relative longitudinal movement and for transmitting tension force along the rail members, the bottom of said tongue being slidable on the top of said end projection, and means for transmitting lateral loads on the rail members while allowing relative longitudinal movement of the rail members, the connection thereby transmitting longitudinal, lateral and downward vertical loads on the rail members while allowing thermal expansion of the rail members, and presenting a continuous load bearing surface along the top of the railheads.

4,485,968

BOILER NOZZLE

Camille J. Berthiaume, Hampton, N.H., assignor to Columbia Chase Corporation, Braintree, Mass.

Filed Sep. 7, 1982, Ser. No. 415,389
Int. Cl.³ B05B 7/06
U.S. Cl. 239—8 **7 Claims**



3. A process for feeding a polyphase fuel mixture into a boiler through an outlet of a nozzle assembly in a dispersed form which facilitates combustion of said mixture, said process comprising the steps of:

(a) feeding a polyphase fuel mixture into said nozzle assembly,

(b) utilizing a plurality of conduits and two mixing zones as a mixing means within said nozzle assembly to assure a thoroughly mixed fuel is supplied to the nozzle outlet, and

(c) discharging said fuel in a plurality of streams in a swirl pattern against an outer edge of a dispersing member mounted in front of, and proximate to, said nozzle assembly outlet.

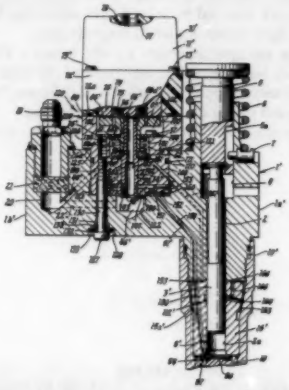
4,485,969

ELECTROMAGNETIC UNIT FUEL INJECTOR WITH CARTRIDGE TYPE SOLENOID ACTUATED VALVE

John I. Deckard, Grand Rapids, and Robert D. Straub, Livonia, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 350,267, Feb. 19, 1982, Pat. No. 4,392,612. This application Apr. 4, 1983, Ser. No. 481,758
The portion of the term of this patent subsequent to Jul. 12, 2000, has been disclaimed.
Int. Cl.³ F02M 51/06
U.S. Cl. 239—88 **2 Claims**

1. An electromagnetic unit fuel injector with a replaceable, cartridge type solenoid actuated poppet valve, said injector including a housing means having a blind, stepped socket therein defining at the blind end thereof a spill chamber and a fuel supply passage for receiving fuel and a drain passage in communication with said stepped socket, a pump cylinder means in said housing means, an externally actuated plunger reciprocable in said cylinder means to define therewith a pump chamber, a valve controlled injection nozzle means at the opposite end of said housing means in flow communication with said pump chamber, a supply/pressure passage means interconnecting said pump chamber to said spill chamber, said cartridge type solenoid actuated poppet valve being adapted to be secured in said socket in hydraulic sealed relationship to said housing means and to partly enclose said spill chamber, said solenoid actuated poppet valve including a valve body means having a stepped bore therethrough to define a supply chamber and a valve stem guide bore extending therefrom with a valve seat encircling said guide bore at the end thereof opposite said supply chamber, a first passage means for interconnecting said supply passage to said supply chamber, a second passage means interconnecting said supply/pressure



passage means to said guide bore next adjacent to said valve seat, a hollow ported poppet valve having a head with a stem journaled in said guide bore, operatively positioned to control fuel flow between said supply chamber and pump chamber via said second passage means and said supply/pressure passage, said stem having a reduced diameter portion next adjacent to said head to define with said guide bore an annulus chamber in flow communication with said second passage means; and, a solenoid means operatively secured to said valve body means, said solenoid means including an armature operatively connected to said stem of said poppet valve and a spring operatively connected to said poppet valve to normally bias said head to an unseated position relative to said valve seat.

4,485,970

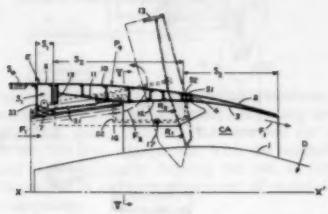
THRUST REVERSAL DEVICE FOR AIR-CRAFT TURBOJETS

Alain M. Fournier, Clamart, and John F. Kennedy, Boulogne, both of France, assignors to Societe de Construction des Avions Hurel-Dubois, Meudon la Foret, France

Filed May 25, 1982, Ser. No. 381,795
Claims priority, application France, May 29, 1981, 81 10693
Int. Cl.³ F02K 1/62
U.S. Cl. 239—265.29 **11 Claims**

1. A thrust reversal device for an aircraft turbojet with an outer casing surrounding an engine structure and defining therewith an annular passage for the flow of a gas flux from an upstream region to a downstream region, the reversal device being formed by mobile elements of an intermediate section of the casing which are pivotable from an inactive position, in which they are located in the prolongation of the fixed part of the casing, to a thrust reversal position in which they extend transversely with respect to the annular passage which they close off while freeing in the casing a passage for radially deflecting the flux outwardly and downstream, the mobile elements of the intermediate section being formed by doors hinged in an intermediate zone of their length to the fixed part

of the casing, said doors thus having upstream and downstream parts, which, in the reversal position, project respectively outside the casing for the upstream part and close off the annular passage for the downstream part, said doors being moreover operated by actuating members or jacks coupled, on the one hand, to the fixed upstream section of the casing and, on the other hand, in a region of the doors situated between their hinging zone to the casing and their upstream end, characterized in that the reversal device comprises, in addition to means (21) for actuating the doors (P1, P2, P3, P4), means for assisting the opening acting as soon as the doors begin to pivot; and wherein:



each of said doors is curved about a longitudinal axis (x—x') resulting in a transverse arcuate section, said assisting means being formed of said transverse arcuate section and a pair of pivots spaced apart along said transverse arcuate section in any one of said doors and upon which pivots said one door is hinged, said pivot defining a hinge axis disposed within said annular passage to place a portion of said door ahead of said hinge axis and a portion of said door behind said hinge axis simultaneously within said annular passage during a pivoting of said one door, whereby both of the portions of said one door receive forces from said gas flux in said annular passage for assistance during a pivoting of said one door.

4,485,971

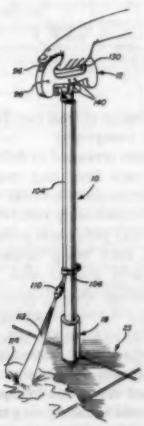
LIQUID SPRAYER

Paul D Pajevic, 220 Gateway Rd., Bensenville, Ill. 60106

Filed Apr. 5, 1982, Ser. No. 365,255

Int. Cl.³ B05B *15/00*

U.S. Cl. 239—289 **6 Claims**



1. A liquid spray device embodied in a walking cane, the cane having an elongate body comprising telescopically mounted spring biased upper and lower sections, the lower section defining a ground engageable lower end of the cane and the upper section defining an upper end of the cane provided with a handle, one of said sections having an internal liquid reservoir and the other of said sections defining internal pumping means for pressurizing liquid in the reservoir, the pumping means being operable by reciprocatory telescopic movement of the sections effected by applying downward pressure on the handle with said ground engageable end of the cane in ground engagement, the device further including downwardly directed nozzle means communicating with the reservoir for receiving liquid under pressure from the reservoir and for releasing the liquid downwardly in the form of a liquid spray to disperse animal droppings and the like, a one-way inlet check valve for admitting air from the pump means to the reservoir, an outlet valve in liquid flow communication between the reservoir and the nozzle means, and manual control means for opening and closing said outlet valve, the arrangment being such that the pump means may be used to build up and store pressure in the reservoir and the outlet valve may be operated to release liquid from the nozzle subsequent to operation of the pump means, wherein the pump means includes a pump chamber formed internally in said lower section of the cane, said chamber incorporating biasing means urging said sections apart, wherein said upper section of the cane defines the liquid reservoir and includes a closure plate at its lower end mounting said inlet valve, a liquid tube having an inlet adjacent said plate, the tube extending upwardly through the reservoir and communicating with said outlet valve, and wherein the outlet valve is located adjacent the handle and the device includes a liquid release tube extending downwardly from the outlet valve adjacent the upper section of the cane, said nozzle being mounted at the lower end of the liquid release tube.

4,485,972

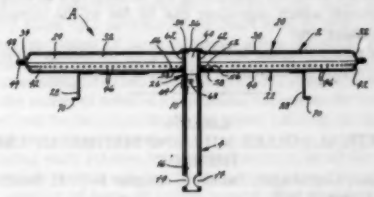
BURNER FOR COOKING GRILLS

Elmer C. Freber, St. Louis, Mo., assignor to Marquette Tool and Die Company, St. Louis, Mo.

Filed Oct. 15, 1981, Ser. No. 311,785

Int. Cl.³ F23D *21/00*

U.S. Cl. 239—553.3 **14 Claims**



1. A burner comprising: first and second burner sections which are joined firmly together and enclose a plenum, at least one of the sections having apertures that open out of the plenum to the surrounding atmosphere, the first section having a wall and the second section having another wall, with the two walls being spaced apart and presented opposite to each other; and a tube extended through the wall of the first section and also through the plenum and having one end abutting the inwardly presented surface of the wall of the second section, the tube having at least one tab projecting outwardly from that portion of the tube that is within the plenum for interfering with the inwardly presented surface of the wall of the first section and thereby preventing the tube from being withdrawn from the plenum, the portion of the tube that is within the plenum further having at least one opening which places the interior of the tube and the plenum in communication, the tab being derived from the wall of the tube and spread outwardly therefrom and the opening being at the portion of the tube wall formerly occupied by the tab, the tube having another end that is accessible at the exterior of the burner, whereby a combustible gas that is introduced into the tube through its other end

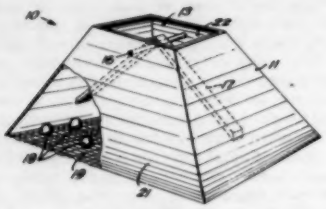
will flow into the plenum through the opening in the tube and thence out of the plenum through the apertures in at least one of the plenum sections, beyond which it may be burned.

4,485,973

INGREDIENT SPREADER

Ronald J. Ricciardi, Woodcliff Lake, N.J., assignor to Acrison, Inc., Moonachie, N.J.

Filed Jan. 28, 1983, Ser. No. 461,963
Int. Cl.³ A01C *15/00*
U.S. Cl. 239—659 **23 Claims**



1. An ingredient spreader comprising

a housing having an inlet at its top for receiving an ingredient, a front wall, a back wall, and an open bottom;

a wire mesh screen attached across the open bottom of the housing;

a plurality of balls;

a baffle connected between the front and back walls of the housing, the lowest portion of the baffle being spaced above the wire mesh screen a distance greater than the diameter of said balls;

said balls being contained within the housing when the ingredient spreader is in operation and said balls resting on the wire mesh screen when the ingredient spreader is at rest;

means for pivotally connecting the housing to a downspout through which ingredient can be fed to the ingredient spreader; and

drive means attached to the housing for oscillating the housing when the ingredient spreader is in operation.

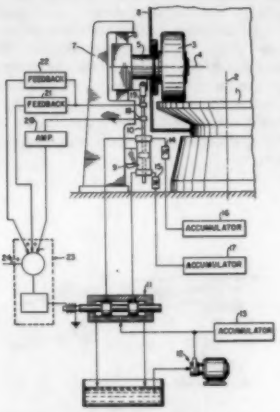
4,485,974

VERTICAL ROLLER MILL AND METHOD OF USE THEREOF

Finn Lass, Copenhagen, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Dec. 15, 1981, Ser. No. 331,017
Claims priority, application United Kingdom, Dec. 17, 1980, 8040462
Int. Cl.³ B02C *4/00*
U.S. Cl. 241—30 **10 Claims**

1. A method of controlling the grinding roller pressure in a vertical roller mill which comprises at least one grinding roller urged by a loading force perpendicularly against the grinding path of a grinding table rotating about a vertical axis, means for determining the loading force of said roller and converting said loading force into a loading signal, and means for determining the acceleration and velocity of said roller in a direction perpendicular to said grinding table and converting said acceleration and velocity into respective signals, characterized in that the instantaneous loading force on the roller is derived and converted into a loading signal, and in that the acceleration and velocity of the roller in a direction perpendicular to the grinding path are derived and converted into acceleration and velocity signals, respectively, which are combined with the loading signal to produce a final signal controlling means for developing the loading force such that the loading force is automatically compensated for the influence of the roller velocity and acceleration upon the roller pressure so as to maintain a predetermined roller pressure and to prevent the roller from dropping down onto the grinding table.

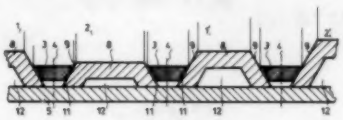


4,485,975

ANCHORAGE OF THE LINER PLATES IN TUMBLING MILLS BY MEANS OF WEDGE-SHAPED ELEMENTS

Erich Eigner, Lödersdorf, Austria, assignor to Waagner-Biro Aktiengesellschaft, Austria

Filed Apr. 21, 1982, Ser. No. 370,410
Claims priority, application Austria, Apr. 27, 1981, 1873/81
Int. Cl.³ B02C *17/22*
U.S. Cl. 241—182 **16 Claims**



1. Apparatus for anchoring at least two liner ring means to a shell of a tumbling mill, comprising:

a plurality of liner plates arranged to define said at least two liner ring means, each liner ring means being situated contiguous and substantially coaxial with the tumbling mill shell in spaced relationship relative to each other and defining a substantially polygonal grinding cross-section;

securing ring means, each being situated contiguous and extending substantially coaxial with the tumbling mill shell and having a wedge-shaped cross-sectional in a plane containing the shell axis and a ring-shaped cross-section in a plane perpendicular to the shell axis, each securing ring means being situated between respective pairs of adjacent liner ring means so that each liner plate of one of said liner ring means is retained in position by a pair of securing ring means and each of said securing ring means being constituted by a plurality of securing segments which are fixed to the shell of the tumbling mill; and

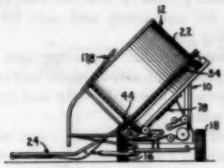
means for fixing said securing ring means segments to the shell of the tumbling mill.

4,485,976

MATERIAL CHOPPING APPARATUS

Allen A. White, Rte. 2, Box 9, Peabody, Kans. 66866

Filed May 7, 1982, Ser. No. 376,225
Int. Cl.³ B02C *13/286*
U.S. Cl. 241—186.2 5 Claims



1. In a tub comminuter of the kind having a stationary floor, a rotary material comminuting assembly projecting upwardly through the floor, and a rotatable tub sidewall for moving material in the tub into engagement with the assembly, the sidewall and floor conjointly defining the tub, an improved floor configuration to enhance movement of material to the assembly comprising:

a transversely arcuate, convex floor portion extending upstream in the tub from said assembly and radially outwardly from the central axis of the tub, said portion having a curvilinear outermost edge;

the radius of curvature of the convexity of the portion gradually decreasing in the direction of movement of the material toward the assembly; and

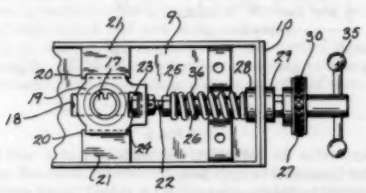
the width of said convex portion measured radially of the tub gradually decreasing in said direction of movement of material toward the assembly.

4,485,977

ROLLER MILL CONSTRUCTION

Charles R. Silverthorn, and Ernest H. Sancken, both of Eureka, Ill., assignors to A. O. Smith Harvestore Products Inc., Arlington Heights, Ill.

Filed Aug. 4, 1982, Ser. No. 405,303
Int. Cl.³ B02C *4/38*
U.S. Cl. 241—230 9 Claims



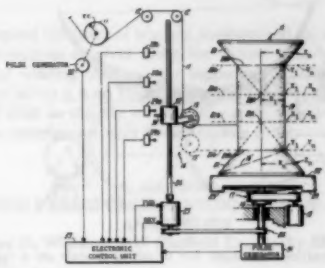
1. A roller mill construction, comprising a housing defining a chamber and including a pair of opposed first walls bordering said chamber, a first roll disposed within the chamber and having a first shaft journalled within said walls, a second roll disposed in the chamber and having the second shaft, bearing means mounted for sliding movement with respect to each wall in a first direction toward the first roll and in a second direction away from said first roll, ends of said second shaft being journaled within respective bearing means, a first elongated member secured to each bearing means and extending in said second direction, a second elongated member threadedly connected to an end of each first member, a drive element directly connected to each second elongated member, an abutment on each second elongated member, biasing means extending between each abutment and said housing for urging the respective bearing means in said first direction, connecting means interconnecting the drive elements, and drive means operably connected to at least one of said drive elements to thereby rotate the drive elements in unison and thereby adjust the threaded connection between said elongated members to vary the position of the bearing means and said second roll relative to said first roll.

4,485,978

METHOD AND APPARATUS FOR WINDING STRAND UPON SPOOLS HAVING TAPERED END FLANGES

James A. O'Connor, Fort Wayne, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Dec. 19, 1983, Ser. No. 562,554
Int. Cl.³ B65H *54/28*
U.S. Cl. 242—25 R 18 Claims



1. In the winding of an advancing strand upon a spool having an out-turned truncated conical end flange at one end of a cylindrical barrel wherein the strand is guided in its approach to the spool by a strand guide, the spool and the strand guide are rotated relative to each other about the longitudinal axis of the spool to wind turns of the strand onto the spool, and the spool and the strand guide are traversed back and forth relative to each other along a course parallel to the longitudinal axis of the spool at a relative linear speed which is related to the speed of relative rotational movement between the spool and the strand guide by a predetermined speed ratio to effect the uniform distribution of turns of strand along the spool and the formation of superimposed layers of said turns following the initial winding of strand onto the spool; the method of increasing the extent of relative longitudinal movement between the spool and the strand guide during strand build-up on the spool which comprises the steps of:

during each relative longitudinal movement of the strand guide toward said end flange commencing a count of the number of turns of strand wound onto the spool at the time when the strand guide passes a first reference position indicative of a longitudinally aligned relation of the strand guide with what would be the apex of said end flange if the same were not truncated;

during each relative longitudinal movement of the strand guide toward said end flange measuring the length of strand wound onto the spool for a specified rotational movement of the spool relative to the strand guide to obtain a length value representing the length of strand which is wound in a predetermined number of turns onto the spool during relative longitudinal movement of the strand guide and the spool from said first reference position to a second reference position indicative of a longitudinally aligned relation of the strand guide with said one end of the barrel; and

comparing each count of the number of turns with the respectively obtained length value and reversing the direction of relative longitudinal movement between the strand guide and the spool when the number of turns counted has reached a predetermined value which is substantially equal to the quotient of the length of strand represented by

said respective length value divided by a predetermined reference value which represents the length of a single turn of strand wound onto the spool barrel during the initial winding of strand onto the spool.

4,485,979

DEVICE FOR SHAFTLESS WINDING MACHINES

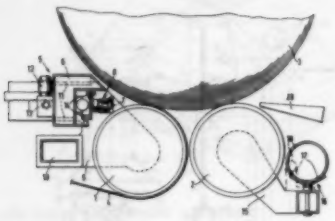
Hartmut Dropczynski, Düsseldorf, Fed. Rep. of Germany, assignor to Jagenberg AG, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 422,990

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151256

Int. Cl.³ B65H *19/20, 17/08*

U.S. Cl. 242—56 R 3 Claims



1. In a shaftless machine for winding a web on a roll the machine having a pair of carrier rollers of which at least one is driven, means for introducing a roll into the gap between said carrier rollers, an assembly comprising an ejection beam and cutting and fastening means, and means for pivoting the assembly about the axis of one of the carrier rollers so as to eject a wound roll and, after a new roll is introduced, to cut the web and to fasten it to the new roll, the improvement which comprises means for displacing the assembly transverse to the axes of the carrier rollers thereby to adjust the position of the ejecting, cutting and fastening means so as to accommodate rolls of different diameters, the assembly displacing means comprising at least one rail extending transverse to the axes of the carrier rollers, a rack and pinion connection between the assembly and pivoting levers, the rack extending parallel to the rail, and a motor for driving the assembly along the rail, the means for pivoting the assembly including a pair of pivoting levers.

4,485,980

SUPPORTING ROLLER WINDING APPARATUS

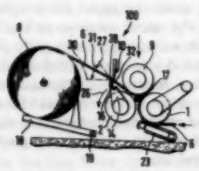
Bernd Görner, Weilheim/Teck, Fed. Rep. of Germany, assignor to Lenox Europa Maschinen GmbH, Kirchheim/Teck, Fed. Rep. of Germany

Filed Nov. 1, 1982, Ser. No. 438,420

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143281

Int. Cl.³ B65H *19/26, 19/30*

U.S. Cl. 242—56 R 15 Claims



1. A winding apparatus for winding a web into a roll, comprising:

(a) first and second supporting rollers for supporting said roll, said supporting rollers positioned parallel to one another and spaced apart with the web passing partially around said first supporting roller and into said roll;

(b) a tube inserter pivotally mounted adjacent said second supporting roller and adapted to carry and deposit a winding tube into a position above the supporting rollers and in contact with said web;

(c) a cutting blade extending over the width of the web and positionable for contacting said web for cutting same along a cutting line;

(d) said tube inserter, after depositing said winding tube, pivoted to a position closely adjacent said cutting line, and said tube inserter cooperating with said cutting blade for cutting said web;

(e) an ejector for moving said roll over said tube inserter and second supporting roller, prior to cutting of said web; and

(f) a braking device positioned upstream of said blade with respect to the running direction of the web, said braking device actuatable during the cutting of said web.

4,485,981

FEEDING WEB MATERIAL

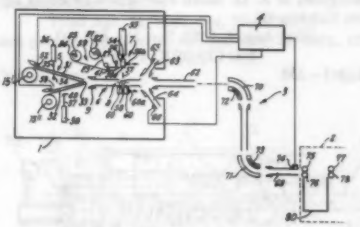
Wladyslaw H. Krywiczanin, Fairoak, and William Lumsden, Winchester, both of England, assignors to British-American Tobacco Company Limited, London, England

Filed Dec. 8, 1981, Ser. No. 328,673

Claims priority, application United Kingdom, Dec. 22, 1980, 8041062

Int. Cl.³ B65H *19/18, 21/00;* B31F *5/06*

U.S. Cl. 242—57 6 Claims



1. Apparatus for capturing the outer end of a web to be unreeled from a reel comprising:

a shaft for storing a supply of fresh reels;

rotable reel-holding means mounted at an end of said shaft;

driving means for rotating a reel on said holding means in the reel-unwinding direction and in the contrary direction;

an elongated air mover having an inlet end and an outlet end and operable for moving the web;

means for mounting said air mover so that the inlet end thereof is moveable nearer to and further from the axis of rotation of the reel-holding means to permit maintenance of said inlet end in close proximity to the periphery of a reel, held by said holding means, over a range of reel radii;

means for advancing a fresh reel axially along said shaft toward said reel-holding means; and

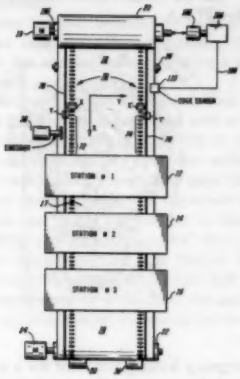
means automatically operable to sense the location of said air mover and raise the air mover clear of a path of a fresh reel during axial advancement thereof toward said reel-holding means.

4,485,982

WEB TRACKING SYSTEM

Robert P. St. John, Sunnyvale, and William A. Lloyd, Los Altos, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1982, Ser. No. 444,143
Int. Cl.³ B65H 25/26
U.S. Cl. 242—57.1 14 Claims



1. Web tracking system for a continuous web of material which is transported from a supply roll means to a takeup roll means along a predetermined path via one or more sequentially positioned processing stations to treat said web comprising

aligned tracking indicia comprising a line of registration marks of substantially uniform spacing and width along each edge of said web,

means mounted relative to the passage of said web to optically observe said tracking indicia along each of said web edges as said web is transported along said path and produce informational tracking signals based upon the passage of said tracking indicia relative to said observation means,

circuit means responsive to said informational signals to produce control signals indicative of changes in the lateral and longitudinal dimensions of said web,

means to provide relative translation between said processing stations and said web along said path,

said translation means responsive to said control signals to translate said processing stations according to changes in the lateral and longitudinal dimensions of said web.

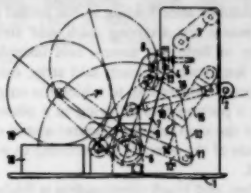
4,485,983

WINDING MACHINE

Dietmar Berzbach, Nümbrecht, Fed. Rep. of Germany, assignor to Erwin Kampf GmbH & Co. Maschinenfabrik, Muhlen, Fed. Rep. of Germany

Filed Apr. 26, 1983, Ser. No. 488,699
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 3216110
Int. Cl.³ B65H 19/26, 19/02
U.S. Cl. 242—65 9 Claims

1. A winding machine comprising a rewind shaft for a roll, roll supporting arms to support the rewind shaft and pivot the rewind shaft in a first path about a first axis, a pressure roller cooperating with the rewind shaft, a supporting drum to support the rewind shaft, pivoting levers to support the supporting drum, and pivot the supporting drum in a second path about a second axis; said winding machine having a range of winding positions wherein the roll supporting arms position the rewind shaft drum at a position along the first path as the pivoting levers position the supporting drum at a position along the second path so that the position of the supporting drum is substantially aligned below the position of a roll on the rewind shaft whereby said supporting drum supports a roll on the rewind shaft substantially from below for any roll diameter throughout the range of winding positions; said winding machine having a position beyond the range of winding positions, wherein, as the rewind shaft continues to pivot along the first



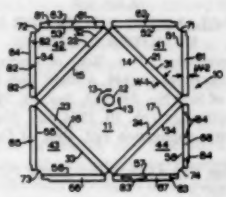
path beyond the range of winding positions and the supporting drum continues to pivot along the second path beyond the range of winding positions, the supporting drum moves to a position where it is no longer substantially below a roll on the rewind shaft so that the roll can be placed on top of a pallet without interference with the supporting drum.

4,485,984

PILE FABRIC CREEL HAVING FOLD-UP END ASSEMBLIES

Clarence O. Williams, 3617 Sheffield Dr., Rocky Mount, N.C. 27801

Filed Jan. 19, 1983, Ser. No. 459,453
Int. Cl.³ B65H 75/02; B65D 85/671
U.S. Cl. 242—77.1 5 Claims



5. A structural member adapted for being formed from folded sheet material and for service as a box-like support structure, comprising in combination;

(a) a blank construction of foldable sheet material having score lines arranged for folding the blank into a structural member, comprising:

(i) a central, substantially square, back wall panel;

(ii) four substantially rectangular side wall panels, each being hingedly connected on a score line along one of its longer sides to a corresponding edge of the back wall panel, and having a width approximately equal to the thickness of the structural member when folded;

(iii) four front wall panels, one of which is hingedly connected on a score line to each of said side wall panels, said front wall panels being substantially isosceles right triangles with the hypotenuse thereof forming the hinged connection with the side wall panels; and

(iv) a plurality of substantially rectangular closure flaps, each having an inner and an outer side, connected on score lines to the equilateral sides of said front wall panels and having a width approximately equal to the thickness of the structural member when folded; and

(b) a set of substantially flat, rigid, metal strips, and means for securing each said strip against the outer side of a selected closure flap so as to reenforce such selected flap and having one end thereof located proximate the right angle corner of the said said front wall panel to which said

selected said closure flap is connected and on which said strip is secured; and

(c) securing means having one portion thereof secured to said back wall panel and another cooperative portion adapted to engage each said one end of said strip to secure each said strip against said back panel and to retain said sheet member after folding in the folded condition,

(d) said means for securing each said strip comprising a plurality of fastening means, said fastening means being spaced lengthwise of each said strip, extending through the selected closure flap to which the strip is secured, and having a portion thereof lying in a plane parallel to the plane of the strip which it secures and in contact with the inner side of the selected closure flap to which the strip is secured,

whereby when said blank construction is folded along each of said score lines into a structural, box-like member of rectangular cross section, inner structural runners along the diagonals thereof are formed by said closure flaps reenforced by said metal strips and said securing means adapt to engage and secure said strips to said back panel whereby to maintain the integrity of said structural member after folding.

4,485,985

BELT STRAP-CLAMPING DEVICE FOR SAFETY BELTS IN MOTOR VEHICLES

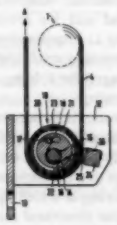
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Continuation of Ser. No. 389,903, Jun. 18, 1982, abandoned. This application Feb. 10, 1984, Ser. No. 579,149

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124188

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.2 **12 Claims**



1. A device for clamping a safety belt in a motor vehicle, said device comprising a clamp member, a roller, means for supporting said roller for movement about an axis offset from the roller axis and toward and away from said clamp member, a sleeve circumscribing said roller and rotatable relative thereto, said sleeve and clamp member defining a nip through which the belt passes, said sleeve having a curved outer surface around which the belt is wrapped, said sleeve having at least a portion movable to establish a coupled connection with said roller upon application of a predetermined force to the belt to prevent rotation of said sleeve relative to said roller and to effect movement of said roller and sleeve about said offset axis to cause said sleeve to clamp the belt against said clamp member.

4,485,986

EMERGENCY LOCKING RETRACTOR FOR A SEAT BELT ASSEMBLY

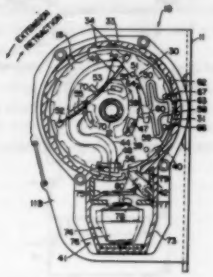
Mutsumi Sugimoto, Hamamatsu, Japan, assignor to Katsuyama Kinzoku Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 24, 1983, Ser. No. 460,359

Claims priority, application Japan, Jan. 28, 1982, 57-12144; Mar. 10, 1982, 57-37486

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.4 A **15 Claims**



1. An emergency locking retractor for a seat belt assembly wherein a reel for paying off and winding up webbing is fixedly mounted on a reel shaft which is rotatably mounted to a frame having side walls and which is spring energized in a direction to cause retraction of the webbing, said shaft having an extension extending beyond a side wall of the frame, the retractor comprising:

(a) a locking mechanism for locking the reel against rotation comprising:

(1) a set of teeth formed in annular arrangement on an outer surface of a sidewall of the frame concentrically surrounding the reel shaft extension;

(2) a cogwheel fixedly mounted on said extension of the reel shaft and having a set of cogs capable of radial alignment with said teeth on the frame;

(3) a locking ring concentrically surrounding the reel shaft extension and having cam follower means for axial movement toward and away from the cogwheel, the locking ring having locking teeth engageable with said cogs of said cog wheel, and said teeth on the frame and being adapted to lock the cogwheel, and therefore the reel, against rotation relative to the frame when moved toward the cogwheel; and

(4) first resilient means between the cogwheel and the locking ring to impart the rotation of the former to the latter, the first resilient means yieldably urging the locking ring away from the cogwheel;

(b) a webbing sensor mechanism for causing the locking mechanism to lock the reel against rotation in response to the extension of the webbing at a rate in excess of a predetermined limit, the webbing sensor mechanism comprising:

(1) a cam disc rotatably mounted on the reel shaft extension and normally engaged with the cam follower means of the locking ring for joint rotation therewith, the cam disc being effective, when locked against rotation relative to the frame in a direction of webbing extension, to cause the locking ring to move toward the cogwheel against the bias of the first resilient means and hence to cause the locking ring to arrest the rotation of the reel;

(2) a curved sensor arm medially pivoted in an eccentric position on an outer face of the cam disc for movement between a retracted and a working position, the sensor arm being adapted to pivot from the retracted to the working position upon exertion of a force on its first end

tending to arrest the revolution of the sensor arm with the cam disc in the direction of webbing extension;

(3) a pawl at a second end of the sensor arm which projects beyond the circumference of the cam disc upon pivotal movement of the sensor arm to the working position;

(4) second resilient means comprising a linear spring biasing the sensor arm from the working toward the retracted position;

(5) an annular member mounted in fixed relation to the frame and concentrically surrounding the reel shaft extension, the annular member having a set of internal ratchet teeth; and

(6) an inertia member rotatably mounted on the reel shaft extension and operatively engaged with at least the first end of the sensor arm so as to be free to rotate relative to the sensor arm and the cam disc within limits, the inertia member having a greater mass than the combined mass of the cam disc and the sensor arm whereby upon rapid rotation of the reel due to the extension of the webbing at a rate in excess of the predetermined limit, the inertia member lags behind the cam disc thereby relatively acting on the first end of the sensor arm to cause same to pivot from the retracted to the working position against the bias of the second resilient means.

4,485,987

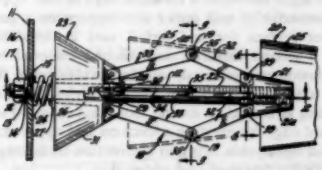
HOLDER FOR THE CORE OF A YARN PACKAGE OR THE LIKE

Willie T. Simpson, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Oct. 3, 1983, Ser. No. 538,262

Int. Cl.³ B65H *49/02*; D03J *5/08*

U.S. Cl. 242—130.1 **10 Claims**



1. A holder adapted to be mounted on a support and to receive a tubular core, said holder comprising, an elongated spindle mounted on said support, an annular base slidably received on said spindle coaxially with the latter, an anchor member supported on said spindle and axially spaced from said base, linkage means connecting said base and said anchor member and operable to permit the base to slide on said spindle toward and away from the anchor member, said linkage means providing a surface which faces radially outwardly of said spindle and which expands and contracts respectively as said base is moved toward and away from said anchor member, said surface being adapted to receive a tubular core and to engage the interior thereof, and a spring acting between said base and said support to urge the base toward said anchor member thereby to resiliently expand said surface against the interior of the core.

4,485,988

TAPE CASSETTE

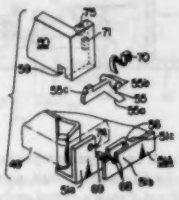
Satoshi Kikuya, Katano; Hidemichi Sumisha, Hirakata, and Seiko Minamide, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 29, 1982, Ser. No. 438,361

Claims priority, application Japan, Nov. 4, 1981, 56-164596[U]; Jan. 25, 1982, 57-9292[U]

Int. Cl.³ G03B *1/04*

U.S. Cl. 242—198 **5 Claims**



1. A tape cassette adapted to be loaded in a tape recorder having an unlocking member, comprising:

a casing comprising a bottom side defined by a bottom surface, a front side defined by a front surface along which a tape is stretched and two lateral sides, at least one of said lateral sides being defined by a side wall having a front end part where said side wall is bifurcated so as to have first and second side extension walls;

a swingable cover swingably carried by said casing for covering and protecting said tape stretched along said front surface, said swingable cover comprising a front part and side walls each having an inner surface;

a groove comprising a first portion defined between said first and second side extension walls and a second portion defined between said second side extension wall and said inner surface of one of said side walls of said swingable cover;

a notch formed in said front part of said swingable cover in a position corresponding to said groove, for allowing said unlocking member of said tape recorder to enter into said groove therethrough;

a cover locking member pivotally supported by at least one of said first and second side extension walls so as to be rotatable in said groove portion within a plane extending in the thicknesswise direction of said tape cassette, said cover locking member comprising an engaging end adapted to be engaged with said swingable cover and an unlocking end facing to said front surface of said cassette through said notch, said cover locking member being normally engaged with said swingable cover at said engaging end for inhibiting said swingable cover from rotating, but being rotated, when said unlocking member which enters into said groove from said front surface through said notch, abuts against and moves said unlocking end to disengage said engaging end from said swingable cover thereby allowing said swingable cover to rotate; and,

a biasing spring for biasing said cover locking member into engagement at the engaging end thereof with said swingable cover.

4,485,989
RECORDING TAPE CASSETTE

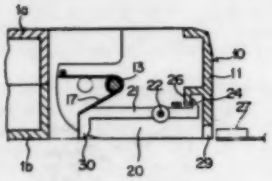
Kenji Ogiro, Kanagawa, and Shinichi Gotoh, Kyoto, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka and Hitachi, Ltd., Tokyo, both of, Japan

Filed Mar. 9, 1983, Ser. No. 473,754

Claims priority, application Japan, Mar. 10, 1982, 57-34263[U]; Feb. 23, 1983, 58-26434[U]

Int. Cl.³ G03B *1/04*; G11B *15/32, 23/04*

U.S. Cl. 242—198 **1 Claim**



1. A recording tape cartridge comprising:

a cartridge case having a front wall, side walls and top and bottom walls for defining a chamber for accommodating a recording tape wound around a tape reel means;

a lid member having a flat front plate and a pair of connecting plates projecting from said flat front plate, said lid member being rotatably mounted on said cartridge case with said connecting plates opposed to said respective side walls so as to rotate said flat front plate between a closed position and an opened position;

an opening defined on a bottom portion of said flat front plate of said lid member;

clearance means of variable width having a front end defined between one of said side walls and corresponding connecting plate of said lid member, said front end of said clearance means being connected with said opening of said lid member, said width of said clearance means being wider in its front portion than in its rear portion; and

lid locking means provided in said clearance means for locking said lid member in a closed position, said locking means being operated by a locking release member of a recording device which enters inside said clearance means through said opening for releasing the locking condition of said lid member to open same.

4,485,990
RECORDING TAPE CASSETTE

Kenji Ogiro, Kanagawa, and Shinichi Gotoh, Kyoto, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka and Hitachi, Ltd., Tokyo, both of, Japan

Filed Mar. 9, 1983, Ser. No. 473,751

Claims priority, application Japan, Mar. 10, 1982, 57-34263[U]; Jun. 4, 1982, 57-83688[U]

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—199 **3 Claims**

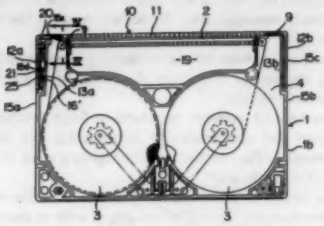
1. A recording tape cartridge which comprises:

a cartridge case having a front wall, side walls and top and bottom walls for defining a chamber for accommodating a recording tape wound around a tape reel means;

a lid member, having a front plate, rotatably mounted on said cartridge case to be rotated between a closed position and an opened position;

an opening defined in a bottom portion of said front plate of said lid member for receiving a standard member of a recording device for locating said cartridge case in said recording device; and

butting means projecting from a front edge of said bottom wall to protrude into the opening of said lid member up to a position substantially corresponding to one half the thickness of said front plate when said lid member is in the closed position, said butting means having a generally flat surface in its front end.



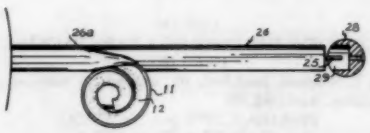
4,485,991
ROLLABLE AIRFOIL

Brian L. Fuller, 1167 Danner St., SE., Atlanta, Ga. 30316

Filed Jul. 1, 1983, Ser. No. 509,795

Int. Cl.³ B64C *3/56*

U.S. Cl. 244—49 **8 Claims**



1. A rollable airfoil comprising an upper skin preshaped into a cambered configuration, said upper skin being formed of a first material having sufficient elasticity to return to its cambered shape after deformation, a lower skin extending in a generally straight line from a forward edge of said upper skin to a rearward edge of said upper skin to provide a generally planar lower surface for said airfoil, said lower skin being formed of a second material, said second material being a generally elastomeric material, said lower skin being fixed to said upper skin for forming an integral airfoil, said second material being stretched to extend from said forward edge to said rearward edge for exerting a force on said upper skin, said force on said upper skin being in a direction to maintain said cambered configuration of said upper skin.

4,485,992
LEADING EDGE FLAP SYSTEM FOR AIRCRAFT CONTROL AUGMENTATION

Dhanvada M. Rao, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 301,078, Sep. 10, 1981, abandoned. This application Aug. 12, 1983, Ser. No. 522,628

Int. Cl.³ B64C *9/00*

U.S. Cl. 244—90 R **5 Claims**

1. A roll control system for an aircraft capable of subsonic, transonic, supersonic or hypersonic flight comprising:

a fuselage;

a highly swept-back, slender wing section attached to each side of said fuselage;

means for stabilizing vortex flows over said wing sections;

said wing sections each including an associated flap means, the leading and trailing edges of which are sharp, and the leading edges of which are attached along the leading edges of the wing sections;

means for independently moving each said flap means from a first position flush with the wing upper surface to a deployed position wherein the trailing edge of the flap means extends at an upward angle of deflection relative to said wing section into the airstream;

the lifting of one of said flap means into the airstream being used to manipulate the vortex flow generated at high angles of attack into a suction vortex on the upward facing surface of the flap means and into an inboard vortex, whereby the center of lift on one of the wing sections containing the deployed flap means moves outboard to produce a rolling moment.

4,485,993

POCKET STRUCTURE FOR A FOLDABLE WING OF AN AIRCRAFT

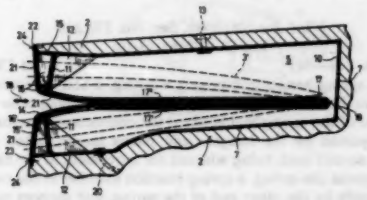
Guenther Mueller, Gauting, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Oct. 24, 1983, Ser. No. 544,785

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1982, 3240260

Int. Cl.³ B64C *3/40*; B65D *37/04*

U.S. Cl. 244—135 B 8 Claims



1. A pocket structure for a foldable wing of an aircraft, comprising wall means including outwardly facing side walls forming a closed volume of given shape, fuel flow means operatively connected through said wall means into said closed volume for using said closed volume as a fuel tank, said wall means including a pocket forming fold for receiving at least a portion of an aircraft wing, said fold of said wall means extending into said volume between said outwardly facing side walls, said pocket structure further comprising separate sealing lip means extending along each outwardly facing side wall of said closed volume forming wall means above and below a wing for sealing a zone above the wing from a zone below the wing for maintaining a pressure difference.

4,485,994

DEVICE FOR SUPPORTING A PIPE

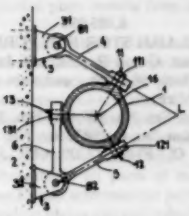
Gilbert Anglaret, Le Chesnay; René Wolff, Le Vesinet, and Alain Audibert, Meudon, all of France, assignors to Framatome, Courbevoie, France

Continuation of Ser. No. 209,924, Nov. 24, 1980, abandoned. This application Dec. 15, 1980, Ser. No. 216,702

Claims priority, application France, Dec. 21, 1979, 79 31401

Int. Cl.³ F16L *3/08*

U.S. Cl. 248—65 11 Claims



1. A device for supporting a piece of pipework (1) with at least one anchoring plate (3) sealed to a rigid structure (2), comprising rectilinear coupling elements (4, 5, 6) which are connected to the anchoring plate (3) and are attached to the pipework by joints (11, 12, 13) so that their longitudinal axes are at right angles to the axis of said pipework, said coupling elements (4, 5, 6) having their longitudinal axes arranged in a triangular configuration so as to absorb torsion or bending stresses to which said pipework (1) is subjected.

4,485,995

SPRING-BIASED WALL HANGER

James W. Hogg, 6216 Hillsboro Rd., Nashville, Tenn. 37315

Continuation-in-part of Ser. No. 268,499, May 29, 1981, Pat. No. 4,422,608. This application Jun. 30, 1982, Ser. No. 393,550

Int. Cl.³ E04G *5/06*

U.S. Cl. 248—218.1 28 Claims

1. In a wall hanger, the combination comprising: a supporting member having a generally flat rear surface and a front surface, said supporting member being adapted for abutting engagement with the front surface of a wall; a fastener rod member made of resilient wire shaped to form a succession of sections including: a penetrating section terminating in a tip adapted to penetrate a wall to introduce thereinto a succesive section; a load supporting section to be disposed generally horizontally in the wall, a flexural section having an upper and a lower end, said flexural section extending downwardly from said load supporting section in front of the front surface of the supporting member; a first means for connecting said flexural section to the front surface of the supporting member at a location spaced a predetermined distance below the load supporting section to resiliently bias the upper end of the flexural section away from the back surface of the supporting member; at least a portion of the penetrating section being in abutting contact with the rear side of the wall when the hanger is in

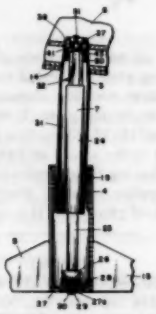
place to resiliently bias said flexural section to press the generally flat rear surface of the supporting member against the front surface of the wall.

4,485,996

HEIGHT ADJUSTOR FOR FURNITURE

Duane M. Beukema, Grand Rapids, and Jack R. Knoblauch, Byron Center, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Continuation of Ser. No. 120,498, Feb. 11, 1980,. This application Jan. 6, 1982, Ser. No. 337,502
Int. Cl.³ F16M *11/00*; A47C *3/30*
U.S. Cl. 248—407 16 Claims



1. In a chair, an improved height adjustment device therefor, comprising:

a pair of telescoping tubular members interconnecting a base portion and a seat portion of said chair;

a ram mounted within said tubular members and having a lowered end thereof connected with one of said tubular members, and an upper end thereof connected with the other of said tubular members, whereby extension and retraction of said ram respectively raises and lowers said chair seat portion; said ram normally assuming a substantially concentric relationship with said tubular members during a nonloaded chair condition; and said ram and tubular members being mutually sized in a radial direction to form a space therebetween for permitting said ram to assume an eccentric relationship with said tubular members during a loaded chair condition;

means for permitting said upper and lower ram ends to pivot with respect to the associated tubular member in which they are connected, whereby lateral forces which are applied to the chair seat during use are supported wholly by said tubular members, and are not transmitted to said ram;

means for rotatably mounting the lower end of said ram in said device; and

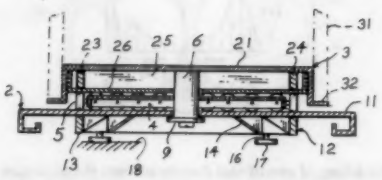
connector means for interconnecting the upper end of said ram and the other of said tubular members to prevent rotation therebetween, whereby rotation of said chair seat portion is positively transmitted to said ram and rotates the same about said mounting means, said connector means including an upper surface which abuttingly mates with a terminal surface on the upper end of said ram to form an articulating joint portion of said pivot means for eliminating the transmission of lateral forces to said ram.

4,485,997

ROTATABLE BASE UNIT SUPPORT FOR A FILE CABINET

Frank Potter, 270 Adams Blvd., Farmingdale, N.Y. 11735

Filed Sep. 21, 1983, Ser. No. 534,271
Int. Cl.³ A47B *49/00*
U.S. Cl. 248—544 2 Claims



1. A rotatable base unit for a file cabinet, comprising an upper base member having a top plate adapted to have a file cabinet mounted thereon, a spoked first ring element fixed to an underface of the top plate having a hub defining an axially depending pivot shaft, and a plate cover seated against the underside of the first ring element having at its center a pivot hole through which the pivot shaft depends; a lower base member adapted to have a stationary condition upon a floor surface, and having a table top plate and a second ring element fixed to an underface of the table top plate; a disk disposed parallel to and with clearance between the plate cover and the table top plate; a succession of closely spaced rollers mounted on stub axles projecting radially from the periphery of the disk, the rollers having their peripheries in rolling contact with the opposed plate cover and the table top plate; the first and second ring elements being of the same diameter and in parallel relationship; each ring element having a rim of a radial thickness corresponding to the width of the peripheries of the rollers and aligned with the said peripheries; the disk and the table top plate having center pivot holes through which the pivot shaft depends; and a washer element secured to the pivot shaft below the table top plate.

4,485,998

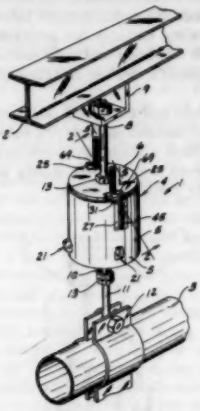
SPRING HANGER

Joseph W. Kowalski, Florissant, Mo., and Charles N. Cunneen, Navasota, Tex., assignors to B-Line Systems, Inc., Highland, Ill.

Filed Jun. 26, 1981, Ser. No. 278,218
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—561 11 Claims

1. A spring hanger comprising a casing, a coil compression spring in the casing, piston means in the casing engageable with one end of the spring and adapted for connection to a load to be supported by the hanger, said piston means, when connected to said load, being adapted for movement in the casing to compress the spring, a spring reaction member in the casing engageable by the other end of the spring, and support means engageable by the reaction member for holding the latter in fixed position with respect to the casing against the expansionary force exerted by the spring when the latter is compressed against the reaction member, said support means comprising a plurality of support members adapted to be detachably secured in openings at spaced intervals around the casing with the members projecting into the interior of the casing for engagement by said reaction member, each member being engageable with the casing for resisting movement of the support member relative to the casing in the direction of said expansionary force while permitting movement of the support member in another direction relative to the casing for removal of the support member from its respective openings , said piston means being movable axially with respect to the casing, said hanger further comprising means for selectively locking said piston in differ-

ent positions of axial adjustment within a range of adjustment, said locking means comprising a rod on the piston means extending axially with respect to the casing, and clamping means on the casing adapted to clamp against said rod for securing it in selected positions of axial adjustment, said casing comprising



a cylindrical body and an end head at one end of the body, said rod extending axially of the casing from said piston means through said end head, said clamping means comprising a clamping member mounted on the end head and movable with respect thereto in a generally radial direction relative to the body of the casing for clamping against said rod.

4,485,999

ANTI VIBRATION MOUNTING WITH REINFORCED BRACKET

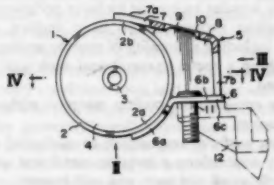
Masahiro Isobe, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 4, 1983, Ser. No. 472,184

Claims priority, application Japan, Jun. 10, 1982, 57-86947[U]

Int. Cl.³ F16F 1/38

U.S. Cl. 248—659 **9 Claims**



1. An anti vibration mounting, comprising:

(a) a tubular inner member which has a central axis;

(b) a tubular outer member fitted coaxially around the outside of said tubular inner member, comprising a first fixing portion and a second fixing portion which are at approximately the same axial position along said tubular outer member and are spaced apart substantially in the circumferential direction thereof;

(c) a resilient tubular elastic intermediate member mounted coaxially between said tubular inner member and said tubular outer member so as to support them mutually with respect to one another;

(d) a main bracket plate formed with a fixing portion substantially corresponding in shape to said first fixing portion of said tubular outer member and fixed thereto and with a protruding portion which extends outwards from said tubular outer member; said main bracket plate extending substantially parallel to said central axis;

(e) a bracing bracket plate formed with a fixing portion fixed to said second fixing portion of said tubular outer member and with a protruding portion which extends outwards from said tubular outer member; said bracing bracket plate extending substantially parallel to said central axis; and the extreme end of said protruding portion of said bracing bracket plate remote from said outer tubular member being fixed to the extreme end of said protruding portion of said main bracket plate remote from said outer tubular member;

(f) a filler bracket plate which is substantially planar and extends in a plane substantially perpendicular to said central axis at an intermediate axial position between the axially extreme portions of said main and bracing bracket plates; said filler bracket plate spanning a space defined between said tubular outer member and said main and bracing bracket plates and substantially intercepting said space with substantially all parts of its peripheral edge abutting against axially intermediate portions of said main and bracing bracket plates and said tubular outer member; and the major portion of said periphery of said filler bracket plate being fixed to said abutting axially intermediate portions of said main and bracing bracket plates and of said tubular outer member;

and

(g) means for fixing said protruding portion of said main bracket plate to an external body.

4,486,000

FORMWORK SYSTEM FOR CONCRETE FLOORS COMPRISING A FLOOR JOIST

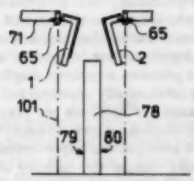
Dieter Klaiss, Stuttgart, Fed. Rep. of Germany, assignor to Peri-Werk Artur Schwörer GmbH & Co. KG, Weissenhorn, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 307,952, Oct. 2, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 431,924

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1980, 3038348; Oct. 9, 1981, 3140142

Int. Cl.³ E04G 13/04

U.S. Cl. 249—23 **45 Claims**



1. A formwork structure for casting a concrete floor provided with a floor joist,

said structure comprising generally horizontal floor form means for supporting and casting the concrete floor,

a pair of side form elements for casting the sides of the floor joist,

each of said side form elements having frame members and side sheathing fastened to said frame members,

a bottom form for extending between said side form elements to cast the bottom of the floor joist,

and releasable fastening means extending between said side form elements for interconnecting said side form elements with said bottom form secured therebetween,

said fastening means being releasable for stripping the side form elements and the bottom form from the cast concrete floor joist,

said floor form means having a pair of upwardly facing hook

shaped hanger means for pivotally suspending said side form elements,

said side form elements having respective upper portions with respective downwardly facing hook shaped hanger means thereon for disengageably and pivotally resting upon the respective upwardly facing hook shaped hanger means,

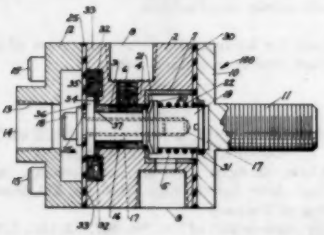
said upwardly and downwardly facing hook shaped hanger means defining a pair of pivot axes about which said side form elements are swingably and disengageably suspended for easy stripping from the cast floor joist by swinging movement and removal of said side form elements from said upwardly facing hook shaped hanger means.

4,486,001

AIR ACTUATED FLUID CONTROL VALVE WITH FLUID SUPPORTED DIAPHRAGM

Richard A. Santefort, Hamilton, and Edmund Neckel, Cincinnati, both of Ohio, assignors to Valco Cincinnati, Inc., Cincinnati, Ohio

Filed Jul. 22, 1982, Ser. No. 400,889
Int. Cl.³ F16K *31/365*
U.S. Cl. 251—61.3 **11 Claims**



1. In an air pressure actuated fluid control valve of the type incorporating a body portion having an interior cavity, a fluid inlet port for admitting incompressible fluid into the cavity and a fluid outlet port for exhausting incompressible fluid from the cavity, a valve stem reciprocable within the cavity and including valve means for permitting fluid flow between the inlet and outlet ports when the stem is in the opened position and for preventing fluid flow between the inlet and outlet ports when the stem is in the closed position, means for urging said valve means to the closed position, a resilient diaphragm attached to said stem and being substantially unsupported over a portion of its surface, and means for applying air pressure against one major surface of the diaphragm so as to cause the valve stem to move to the opened position, the improvement in combination therewith comprising means for limiting deflection of the unsupported portions of the diaphragm including means for selectively introducing a trapped reservoir of said incompressible fluid derived from said fluid inlet port against the unsupported portion of the opposite major surface of the diaphragm to furnish a restraining force to prevent sagging of the diaphragm when air pressure is applied to the opposite major surface of the diaphragm when the valve is in the opened position.

4,486,002

COMBINED METALLIC AND FLEXIBLE NON-METALLIC PRESSURE SEAL

Ronald L. Riess, and Thomas J. Ames, both of Houston, Tex., assignors to FMC Corporation, Chicago, Ill.

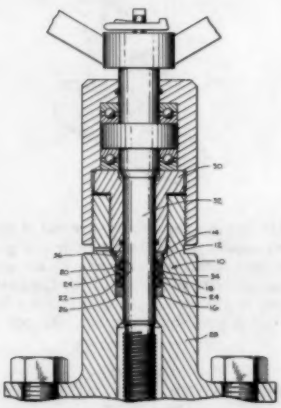
Filed Sep. 24, 1982, Ser. No. 423,383
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—214 **11 Claims**

1. A combined metallic and flexible non-metallic dynamic and static seal element for preventing fluid leakage between opposed inner and outer annular metallic surfaces through a wide temperature and pressure range, comprising

a. a sleeve-like metallic member with at least one annular groove on its outer periphery and at least two annular grooves on its inner surface, said grooves located to establish an accordion-like portion in the member intermediate its ends, said accordion-like portion including a plurality of annular sealing surfaces for establishing a metal-to-metal seal with said inner and outer metallic surfaces, and

b. flexible non-metallic sealing material within and filling said grooves,

whereby when said seal element is positioned between said outer and inner metallic surfaces and subjected to an axial compressive force a fluid-tight metal-to-metal seal is established between said annular sealing surfaces and said inner and outer metallic surfaces.



11. In a fluid flow control valve including a bonnet, a stem extending through the bonnet, a sleeve-like stem seal between the stem and the bonnet, and means connected to the bonnet for exerting an axial compressive force on the stem seal, the improvement comprising

a. a metallic and accordion-shaped portion in the stem seal intermediate the ends thereof, said portion including at least one annular groove on its outer periphery and at least two annular grooves on its inner surface, said portion further including a plurality of annular sealing surfaces for establishing a metal-to-metal seal with said bonnet and stem, and

b. flexible non-metallic sealing material within and filling said grooves,

said sealing surfaces responding to said axial compressive force by establishing a metal-to-metal seal with the adjacent surfaces of said stem and said bonnet.

4,486,003

GATE VALVE STRUCTURE

Danny S. Meyer, Richmond, and George A. Moran, Houston, both of Tex., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

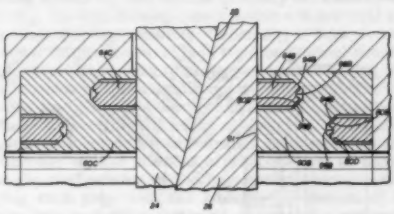
Continuation-in-part of Ser. No. 404,202, Aug. 2, 1982,. This application Jan. 6, 1984, Ser. No. 568,866
Int. Cl.³ F16K *3/00*
U.S. Cl. 251—328 **5 Claims**

1. A gate valve comprising a valve body having a valve chamber therein and inlet and outlet flow passages defining a flow way communicating with the valve chamber, an expanding gate assembly mounted within said chamber for sliding movement transversely of the flow way between a first position wherein the valve is open and a second position wherein

the valve is closed and including wedgingly engageable elements arranged for sliding relative movement transversely of the flow way to expand the gate assembly in the longitudinal direction of the flow way when the valve is in said open and closed positions, said body having an internal annular recess surrounding each said flow passage and being defined by an end wall and a generally cylindrical side wall opening into said chamber;

a metallic seat ring disposed loosely within each said recess, each seat ring having an axial dimension which exceeds the depth of the recess in which it is disposed to thereby extend into said chamber, each said seat ring having a planar front face disposed towards the gate assembly and a first annular groove provided in its front face in surrounding relation to the flow way, each said seat ring having an annular rear face adapted to contact with the annular end wall of the recess and being provided with a second annular groove in its rear face in surrounding relation to said flow way, each said annular groove being defined by a pair of generally parallel and cylindrical groove sides comprising an inner groove side and an outer groove side and a groove bottom joining said inner and outer groove sides, each said groove bottom having a first frusto-conical bottom portion facing said inner groove side and joining said outer groove side, and a second frusto-conical bottom portion facing said outer groove side and joining said inner groove side;

a first annular sealing member loosely received within the annular groove in said front face of each of the seat rings and protruding into said chamber beyond the front face of



the seat ring to form a ring of sealing contact area when the gate assembly is expanded thereagainst;

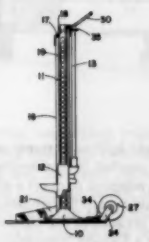
a second annular sealing member in each of said seat rings being loosely received within the annular groove in the rear face of the seat ring whereby it is adapted to form a fluid-tight barrier and seal between the rear face of the seat ring and the valve body when the gate assembly is in its expanded condition, each said annular sealing member in each of said seat rings having front and rear seal faces joined by generally parallel inner and outer cylindrical seal sides, said rear seal face having a first frusto-conical surface portion extending from said outer seal side in coaxial relation with said cylindrical seal sides and having a cone angle conforming to said first frusto-conical bottom portion, said rear seal face having a second frusto-conical surface portion extending from said outer seal side in coaxial relation with said cylindrical seal sides and having a cone angle conforming to said second frusto-conical bottom portion, and each said annular sealing member having a length dimension between its front and rear seal faces which exceeds the depth of said annular groove in which it is received such that said front seal face extends from said annular groove beyond the front seat face when loosely seated in the groove with its gate assembly in the collapsed condition whereby expansion of the gate assembly to the open or closed position effects an axial compression of the annular sealing member in each annular recess and fluid pressure in the flow way urges the annular sealing members in the upstream seat ring against said first frusto-conical bottom portions of the grooves in the upstream seat ring in a wedging movement toward the gate assembly to effect a tight seal therewith which increases with increasing fluid pressure and in the event of leakage past the upstream seat ring in the closed condition of the valve fluid pressure in the valve chamber urges the annular sealing members in the downstream seat ring against said second frusto-conical bottom portions of the grooves in the downstream seat ring in a wedging movement toward the gate assembly to effect a tight seal therewith which increases with increasing fluid pressure.

4,486,004

JACK STAND

Arthur O. Drewitz, Box 111, Assiniboia, Saskatchewan, Canada (S0H 0B0), and Donald D. Bushell, General Delivery, Limerick, Saskatchewan, Canada S0H 2P0

Filed Dec. 22, 1982, Ser. No. 452,336
Claims priority, application Canada, Dec. 24, 1981, 393226
Int. Cl.³ B66F *3/00*
U.S. Cl. 254—2 B **26 Claims**



1. A jack stand for jacks which include a base plate and a relatively long vertically extending jack stem, and an actuating handle for a jacking element movable up and down the stem; said jack stand comprising in combination a supporting base, means to stabilize said base, a pair of spaced and parallel support posts extending upwardly from said supporting base, an apertured top brace plate for detachably receiving the upper end portion of the stem of the associated jack and means to detachably clamp the base plate of the associated jack, to the supporting base, said apertured top brace plate being situated at an angle to the vertical to facilitate detachable engagement of the stem of the associated jack, through said aperture.

4,486,005

SIDE ROD TENSIONING DEVICE FOR PREVENTING MISALIGNMENT AND DISTORTION DURING ASSEMBLY OF THE PLUNGER DRIVE MECHANISM IN A RECIPROCATING PUMP

Charles Yaindl, Harrison, N.J., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Continuation of Ser. No. 283,453, Jul. 15, 1981, abandoned. This application Mar. 16, 1984, Ser. No. 589,860
Int. Cl.³ E21B *19/00*
U.S. Cl. 254—29 A **1 Claim**

1. A tensioning device for evenly prestressing at least two spaced side rods in a reciprocating machine and a transverse member such as an outside crosshead connected thereto by threaded take-up means, comprising:

an extension section formed on each of said side rods outboard of the threaded take-up means;

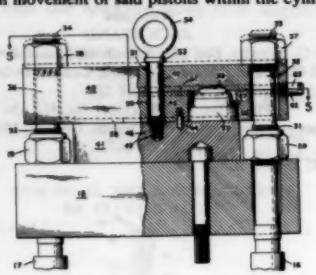
a jack assembly positionable between said side rods having spaced means to permit the jack assembly to slide over the respective extension means so that at least one face thereof is connected with the outboard face of the transverse member;

means for holding the jack assembly in assembled position on the respective extension means of the side rods;

a pressure plate disposed between the jack assembly and the outboard face of the transverse member extending substantially the entire distance between the side rods;

expansible means on the jack assembly including at least two hydraulic cylinders laterally aligned with the side rods, each of said cylinders having a movable piston mounted within it adapted to extend out of said one face in contact with the pressure plate in lateral alignment with the side rods;

hydraulic pump means connected with said cylinders for pressurizing the cylinders with hydraulic fluid to actuate uniform movement of said pistons within the cylinders;



gauge means on said hydraulic pump means to determine the pressure being exerted by the hydraulic fluid; and

said pistons being adapted to exert a predetermined force on the pressure plate which distributes an essentially uniform load across the breadth of the transverse member between the side rods in a fashion tensioning the rods to stress the same to preselected levels while minimizing the development of unbalanced loads on the rods due to deformation of the jack assembly, thereby enabling a workman to tighten the threaded take-up means before the jack assembly is removed without inducing twist in the transverse member.

4,486,006

SELF-LEVELLING VEHICLE SUPPORT ARRANGEMENT

John A. Fawdry, 10, Somerville Rd., Sutton Coldfield, West Midlands, United Kingdom

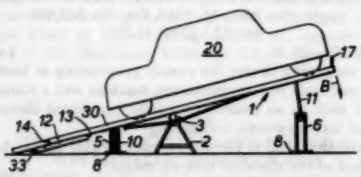
PCT No. PCT/GB81/00198, § 371 Date May 26, 1982, § 102(e) Date May 26, 1982, PCT Pub. No. WO82/01183, PCT Pub. Date Apr. 15, 1982

PCT Filed Sep. 23, 1981, Ser. No. 385,378

Claims priority, application United Kingdom, Oct. 1, 1980, 8031719

Int. Cl.³ E02C *3/00*

U.S. Cl. 254—88 **5 Claims**



1. A self-elevating vehicle support arrangement comprising two pivotally-mounted tracks (1) arranged side-by-side in spaced parallel relation, a respective stand (2) pivotally mounting each track (1) intermediate the ends thereof at such a position that the track (1) is arranged to pivot from an inclined ramp position into an elevated horizontal position under the weight of a vehicle (20) moved fully onto the tracks (1), support-stop means (6) disposed on the side of the stands away from the ends of the tracks which contact the ground when the tracks (1) are in their inclined ramp position, said support-stop means (6) being arranged to prevent the tracks (1) pivoting past their said horizontal positions as a vehicle (20) is moved onto the tracks (1) and serving, together with said stands (2), to support the weight of the vehicle when the tracks (1) are in their horizontal positions, and telescopic damping means (5, 6) extending between the tracks (1) and the ground and serving to damp pivotal movement of the tracks (1), characterised in that:

the said telescopic damping means comprises two telescopic damping arrangements (5, 6) connected to the tracks (1) on respective sides of, and spaced from, the stands (2) whereby, independently of the sense of pivoting of the tracks (1), track movement is damped by the downward telescoping of a said damping arrangement (5, 6),

the overall vehicle support arrangement is free standing with the ground-contacting portions (8) of the damping arrangements (5, 6) being connected to the corresponding stands (2) only through the associated track (1).

4,486,007

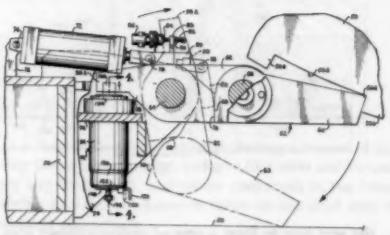
EMERGENCY PAWL RELEASE SYSTEM FOR WINCHES

Clare Kuhlman, Platte County, Mo., assignor to Intercontinental Engineering-Manufacturing Corporation, Kansas City, Mo.

Filed Jul. 16, 1982, Ser. No. 398,905

Int. Cl.³ B66D *5/32*; F16D *41/12*

U.S. Cl. 254—376 **18 Claims**



1. In a heavy duty winch having a frame, a rotatable winch drum on the frame for reeling cable in and out, a ratchet wheel on the winch drum, and a pivotal pawl on the frame engageable with the ratchet wheel to lock, the winch drum against rotation in one direction, the combination therewith of:

power means for releasing the pawl from the ratchet wheel under normal conditions;

explosive means for applying an explosive emergency release force to the pawl when said explosive means is activated, said release force being applied to the pawl in a direction to disengage the pawl from the ratchet wheel to effect a release position of the pawl wherein rotation of the winch drum is permitted;

fluid control means for activating said explosive means under the influence of fluid pressure and independently of said power means;

and wherein said explosive means includes an explosive actuator having a housing mounted on the frame at a location adjacent the pawl;

an extensible piston in said actuator housing having a normally retracted position and being movable to an extended position acting against the pawl in a direction to effect the release position of the pawl; and

an explosive charge confined in said housing adjacent said piston to explosively force the piston to the extended position thereof upon firing of said explosive charge, said fluid control means being operable to fire the explosive charge.

4,486,008

PLAY ENCLOSURE FOR CHILDREN

Bryan J. Larkin, Bexley, Australia, assignor to Donald Andrew Logan; Arthur Edward Pty. Ltd. and Sunlea Developments Pty. Ltd., all of New South Wales, Australia

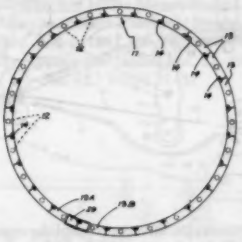
PCT No. PCT/AU82/00163, § 371 Date May 27, 1983, § 102(e) Date May 27, 1983, PCT Pub. No. WO83/01185, PCT Pub. Date Apr. 14, 1983

PCT Filed Oct. 5, 1982, Ser. No. 504,052

Claims priority, application Australia, Oct. 2, 1981, PF1052; New Zealand, Oct. 14, 1982, 202167; South Africa, Oct. 15, 1982, 82/7558; Canada, Oct. 20, 1982, 413784

Int. Cl.³ E04H *17/16*

U.S. Cl. 256—26 4 Claims



1. A foldable child play enclosure comprising, a co-extensive vertically spaced top and bottom generally horizontally oriented ring, the rings defining a space within which a child is to be retained, each ring consisting of a plurality of links pivotally attached at their ends so as to have their longitudinal direction of extension along the ring form thereby, each link being integrally moulded with one end having a yoke consisting of two vertically spaced lugs and the other end having a projection to be located between the lugs of the adjacent link, a positioning surface on each link positionable to abutt an adjacent link so as to define the relative positions of adjacent links to thereby define the configuration of the rings, pivot means pivotally coupling each yoke with this associated projection of the adjacent link to thereby enable relative pivoting movement between adjacent links about a vertical axis, and release means releasably coupling a pair of links in each ring, with the pairs of links being vertically aligned, said release means being operable to release the links of each pair so that the enclosure may be rolled up by pivoting adjacent links relative to each other in a predetermined direction and wherein the abutting positioning surfaces prevent pivoting of the link in a direction opposite to said predetermined directions beyond a predetermined position.

4,486,009

APPARATUS FOR COOLING SHEET METAL PANELS

Gerhard Kopf, Dillingen, Fed. Rep. of Germany, assignor to Aktien-Gesellschaft der Dillinger Hüttenwerks, Dillingen, Fed. Rep. of Germany

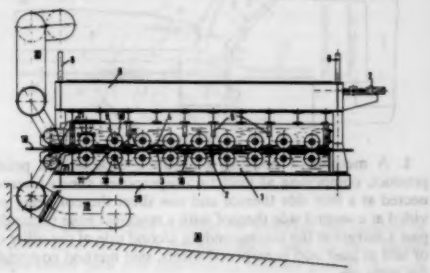
Filed Mar. 16, 1983, Ser. No. 475,853

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209875

Int. Cl.³ C21D *9/46*

U.S. Cl. 266—114 25 Claims

1. Apparatus for cooling panels, particularly panels which consist of sheet metal, comprising confining means defining a coolant-containing channel and having an inlet, an outlet, a top wall and a bottom wall, each of said walls having a plurality of relatively narrow slots; means for advancing the panels through said channel, including a first set of disc-shaped transporting members having portions extending into the channel through the slots of the top wall, a second set of disc-shaped transporting members having portions extending into the channel through the slots of the bottom wall, and means for rotating at least some transporting members of at least one of said sets so that a panel which is introduced through the inlet and between said portions of the two sets of transporting members in said channel is advanced toward and beyond said outlet, said confining means further having side walls extending between said top and bottom walls and flanking the path of panels between said portions of the two sets of transporting members in said channel; a coolant-containing vessel for said confining means and said transporting members, each of said sets comprising several rows of coaxial transporting members and a shaft for each of said rows, said shafts being disposed externally of said channel in the interior of said vessel and said



advancing means further comprising rollers mounted on said shafts, said transporting members extending radially beyond the respective rollers and into and through the slots of the respective walls of said confining means, said side walls having openings for the shafts carrying the transporting members of said first set and bellows for sealing said openings, said bellows being arranged to permit substantially vertical movements of the respective shafts with reference to said bottom wall; a cover for said vessel at a level above said top wall; and means for changing the level of said top wall and of the first set of transporting members in the interior of said vessel.

4,486,010

JIG FOR HOLDING MEMBERS IN RADIAL ARRAY

Edward T. Haas, Jr., 6882 Trigo Rd., Goleta, Calif. 93017

Filed Mar. 21, 1980, Ser. No. 132,516

Int. Cl.³ B25B *1/00*

U.S. Cl. 269—3 8 Claims

1. A jig for holding members together in a radiating array having an axis transverse to the radiation comprising:

(a) a support member;

(b) several axially extending fingers flexibly mounted to the support member; and having gripping surfaces that are parallel to radii from the jig axis;

(c) and resilient means for biasing the fingers toward said axis to thereby grip members disposed between the gripping surfaces of the fingers.

4,486,011
METHOD AND APPARATUS FOR OPENING MULTI-SHEET PRODUCTS, ESPECIALLY PRINTED PRODUCTS

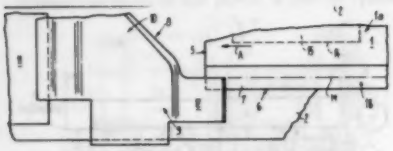
Rolf Rhunke, Wetzikon, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Nov. 15, 1982, Ser. No. 441,955

Claims priority, application Switzerland, Nov. 24, 1981, 7497/81

Int. Cl.³ B65H *5/30*

U.S. Cl. 270—55 **21 Claims**



1. A method of opening a product, especially a printed product, comprising at least two superposed sheets interconnected at a first side thereof and one sheet thereof being provided at a second side thereof with a marginal zone protruding past a margin at the corresponding second side of the other one of said at least two superposed sheets, said method comprising the steps of:

placing said product comprising said at least two superposed sheets on a support with the sheet provided with said protruding marginal zone lying upon said support;

moving said product relative to an opening device containing an opening element in a predetermined direction of travel with an open side of the product leading and moving towards said opening element;

raising said product prior to contacting said opening element;

bringing said protruding marginal zone of the product into engagement with said opening element of said opening device; and

deflecting said sheet having said protruding marginal zone by means of said opening element downwardly from the other sheet of said product lying thereabove, so that said at least two sheets of said product are opened and spaced apart as said product is moved relative to said opening device.

4,486,012
TRANSPORTING ARRANGEMENT FOR SHEET LIKE DATA CARRIERS

Georg Böck, Munich; Erich Schlick, Lohhof, and Günther Schnall, Eching, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed May 9, 1983, Ser. No. 493,350

Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217115

Int. Cl.³ B65H *5/22*

U.S. Cl. 271—3 **6 Claims**

1. An arrangement for transporting a sheet-like data carrier with reversing its direction of movement and at the same time maintaining its original orientation, comprising

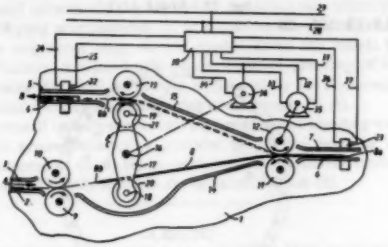
means forming a first transporting path for a data carrier and provided with a continuously rotating first pair of transporting rollers;

means forming a second transporting path for the data carrier and provided with one continuously rotating second transporting roller;

means forming a reversing path for the data carrier and provided with a third pair of transporting rollers which are reversible in their direction of rotation, said first and second transporting paths being open toward said reversing path;

a turnable lever located between said first and second transporting paths and provided with two supporting rollers at its ends, said turning lever having a lever length and being turnably mounted in a mounting point, wherein said length of said turning lever and said mounting point being selected so that one of said supporting rollers is bringable to abutment against said one second transporting roller of said second transporting path, whereas simultaneously the other supporting roller comes to a position below said first transporting path;

sensing means arranged at said reversing path and operative for sensing a front edge of the data carrier; and



controlling means operative to control the movement of said third pair of transporting rollers of said reversing path and said turnable lever in response to said sensing by said sensing means, so that reversing of transporting direction of said third pair of transporting rollers of said reversing path and turning of said turnable lever to a position in which the other supporting roller comes to abutment against said one second transporting roller of said second transporting path takes place before the front edge of the data carrier has passed the supporting roller located below said first transporting path.

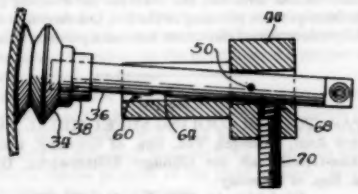
4,486,013
ADAPTIVE VACUUM CUP MECHANISM

Gary L. Vander Syde, Naperville, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Aug. 18, 1982, Ser. No. 409,235

Int. Cl.³ B65H *3/08*

U.S. Cl. 271—107 **16 Claims**



1. A vacuum device for feeding documents from a stack to a document transport comprising:

a flexible cup at one end of the vacuum device,

a body with an internal hollow chamber in fluid communication with the flexible cup,

means for providing a vacuum at the other end of the vacuum device in fluid communication with the hollow chamber,

pivot means for providing a pivot point about which the body can rotate,

valve means having a passageway passing through the body with one end of the passageway in fluid communication with the internal hollow chamber and the other end of the passageway terminating at an orifice in the body and

sealing means for opening or closing the orifice as the body pivots about the pivot means, the valve means operated responsive to the document transport pulling the document away from the flexible cup causing the body to pivot about the pivot means,

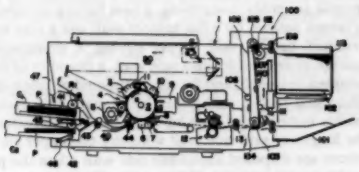
the valve means serving as means for creating a vacuum at the flexible cup when a document is to be withdrawn from the stack and destroying the vacuum at the flexible cup when the document is pulled away by the document transport and thereby selectively retaining and releasing documents in response to the pivoting of the body.

4,486,014

APPARATUS FOR DISCHARGING SHEETS OF PAPER

Yuji Enoguchi, Osaka, and Mikio Masui, Hyogo, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 3, 1982, Ser. No. 384,756
Claims priority, application Japan, Jun. 22, 1981, 56-96992
Int. Cl.³ B65H *29/50*
U.S. Cl. 271—200 **5 Claims**



1. An apparatus for discharging sheets of paper from a device for performing an operation on the sheets, said apparatus comprising:

a plurality of spaced parallel belt supporting rollers, one of said rollers being a drive roller;

a belt member reeved around said belt supporting rollers and having at least one run extending from a first to a second one of said belt supporting rollers, said belt member being positioned to receive sheets on the outer peripheral surface of said belt member at the end of said run adjacent said first belt supporting roller;

an offset roller in rolling contact with said outer peripheral surface of said belt member at a position downstream of said first belt supporting roller;

means connected to said offset roller for changing the position of the offset roller between a position in which the axis of rotation thereof is parallel to the axis of rotation of said first and second belt supporting rollers and a position in which the axis of rotation thereof is skew to the axis of rotation of said first and second belt supporting rollers for twisting said belt member as it passes said offset roller; and

guide means just downstream of said offset roller for engaging and guiding sheets of paper carried along the outer peripheral surface of said belt member and betwen said belt member and said offset roller away from said belt member in a direction generally transverse to the axes of said belt supporting rollers.

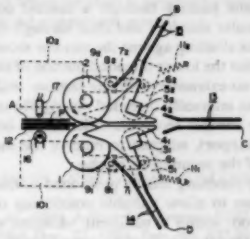
4,486,015

SHEET DIVERTING DEVICE FOR COPYING APPARATUS OR THE LIKE

Yuji Takahashi, Naka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1982, Ser. No. 374,028
Claims priority, application Japan, Jun. 9, 1981, 56-88614
Int. Cl.³ B65H *29/60*
U.S. Cl. 271—305 **2 Claims**

1. A sheet diverting device for a copying apparatus or the like for diverting sheets from a first transportation path, said device having at least second, third and fourth transportation paths diverging from said first transportation path, first deflecting means displaceable between a first position for guiding a sheet from said first transportation path to said second transportation path and a second position for blocking the passage of the sheet from said first transportation path to said second transportation path and constituting a part of a path for guiding the sheet to said third transportation path, second deflecting means displaceable between a first position for guiding the sheet from said first transportation path to said fourth transportation path and a second position for blocking the passage of the sheet from said first transportation path to said fourth transportation path and constituting another part of the path for guiding the sheet to said third transportation path, and a pair of rollers for transporting the sheet provided near the diverging portion of said first, second, third and fourth transportation paths, the sheet guiding fore end portions of said first and second deflecting means being disposed at the nip between said pair of rollers.

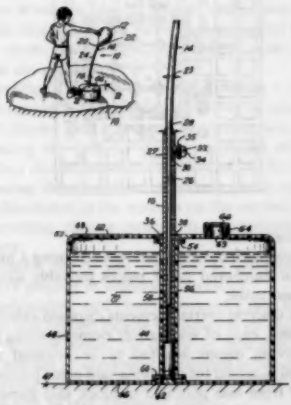


4,486,016

TOY PUNCHING BAG SUPPORT CONSTRUCTION

Herbert Rubin, New York, N.Y., assignor to New York Toy Corporation, Lawrence, Mass.

Filed Sep. 30, 1982, Ser. No. 430,209
Int. Cl.³ A63B *69/00*
U.S. Cl. 272—78 **3 Claims**



1. An improved toy punching bag support construction which comprises:

a. a punching bag having a lower opening;

b. a flexible support rod having an upper end and a lower end; the punching bag being secured to the upper end thereof, the rod being of sufficient length;

c. a base support having a top wall, a bottom wall and a side wall defining an inner space, and having an inner sleeve passing from the top wall to the bottom wall, the sleeve

having upper and lower annular recess shoulders depending inwardly from the top and bottom walls respectively;

d. adjustable securement means removably secured to the base support and having a rigid securement member received within the sleeve of the base, stop means positioned along the length of the securement means, the lower end of the securement means being externally threaded;

e. a washer received within the upper annular recessed shoulder on the top wall of the base support, the securement means passing through a central opening in the upper annular shoulder and then through the sleeve, the stop means abutting against the annular shoulder at such a position that the lower threaded portion of the securement means is co-extensive with the bottom wall of the base support, an internally threaded nut rigidly secured within the lower annular recess shoulder in the bottom wall of the base support, adapted to receive the threaded lower portion of the securement means;

f. adjustable retaining means positioned within the securement means to allow variable positioning of the flexible support rod within a sufficient variation of heights to accommodate the needs of a young person; and

g. a reclosable opening located within one of the walls of the base support so that the hollow inner space may be filled with a ballast to provide sufficient weight for free standing use of the construction as a punching bag;

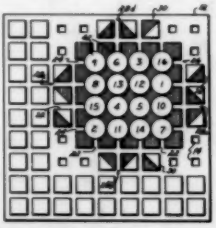
h. whereby the unit may be easily assembled in a strong rigid and useful condition, and may be as easily dissembled with little effort.

4,486,017

BOARD WITH MOVABLE GAME PIECES AND ORIENTABLE BARRIER SECTIONS

Carl F. Evert, Jr., 3163 Bellewood Ave., Cincinnati, Ohio 45213

Filed Jan. 3, 1983, Ser. No. 455,056
Int. Cl.³ A63F 9/08
U.S. Cl. 273—153 S **5 Claims**



2. A game comprising:

a board formed with columns and rows defining a playfield;

a plurality of numbered game pieces movable along said columns and rows;

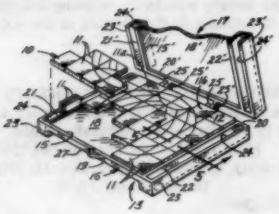
a plurality of discrete barrier elements disposed exteriorly of said playfield, each of said barrier elements being formed with receiving means adapted to be oriented to face toward said playfield for receiving said game pieces and to face away from said playfield to block said game pieces from leaving said playfield, at least one of said barrier elements being positioned so that said receiving means thereof is oriented to receive a game piece exteriorly of said playfield, said remaining barrier elements being positioned so that said receiving means thereof block movement of said game pieces from said playfield, whereby said game pieces may be arranged in an array along said columns and rows of said board such that the summation of the numbers of the game pieces in each column, row and diagonal of said array is equal.

4,486,018

PUZZLE AND TRANSPARENT CONTAINER THEREFORE

Claude E. Keller, Jr., c/o Kelberg Puzzle Co., 1318 East State St., Rockford, Ill. 61108

Filed Mar. 11, 1983, Ser. No. 474,516
Int. Cl.³ A63F 9/10
U.S. Cl. 273—157 R **5 Claims**



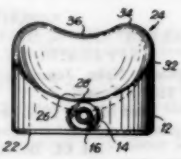
1. A puzzle assembly comprising, a base having an upwardly opening recess defined by a flat bottom wall and a side wall of predetermined height, said recess having a predetermined configuration as defined by said side wall, a plurality of puzzle pieces adapted to interfit and form a completed puzzle substantially filling said recess, said pieces being made of a yieldably compressible material and each having a thickness greater than twice the height of said side wall whereby the upper surfaces of the pieces are disposed above the side wall when the pieces are in said recess lying on said bottom wall, a cover movable relative to said base between an open position and a closed position in which the cover overlies said recess, said cover including a transparent top wall having the same size and configuration as said bottom wall and engageable with said puzzle pieces when said cover is in said closed position whereby the pieces are compressed and held in place by the top wall and may be viewed through the latter, said bottom wall also being transparent whereby pieces on the bottom wall may also be observed through the latter, and first and second graphic representations, one on each side of the completed puzzle with one representation showing through said top wall and the other through said bottom wall, said cover being identical with said base and including an identical recess whereby, when the puzzle is partially assembled, the cover may be closed to compress the pieces and hold the latter in place and the assembly may be turned over so that the assembly may be continued in the other recess with the other representation facing up.

4,486,019

COMBINATION GOLF PUTTER AND RETRIEVER

Paul T. Sievers, 986 Fenworth Blvd., Franklin Square, N.Y. 11010

Filed Dec. 6, 1982, Ser. No. 447,236
Int. Cl.³ A63B 53/04
U.S. Cl. 273—162 E **1 Claim**



1. A combination golf putter and retriever, comprising:

a generally circular head;

a shaft affixed to said head;

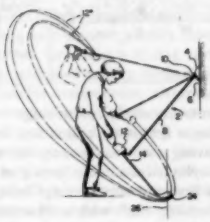
first and second opposed sides on said head;
a striking face on said first side of said head;
said striking face being symmetrical about a center line parallel to an axis of said shaft;
said face having a first generally circular perimeter effective to permit striking a ball independently of a slope of a surface upon which said ball rests and independent of an angle made by said axis with said surface;
a cup in said second side of said head;
said cup having a second generally circular perimeter substantially coextensive with said first circular perimeter;
said cup having a part spherical inner contour, said inner contour having a radius substantially equal to a radius of said golf ball;
said cup being at least partially surrounded by a lip;
said lip rising to first and second lateral peaks adjacent an extremity of said head remote from said shaft;
said lip being effective to support a golf ball in said cup at angles of an axis of said shaft exceeding a critical angle from a vertical;
said critical angle being at least 15 degrees;
said head being sized to permit insertion into a golf green hole;
said lip containing a central depression therein between said first and second lateral peaks, said central depression providing means for permitting said lip to pass below an equator of a golf ball in said golf green hole; and
said lip and cup stably supporting said golf ball for removal of said golf ball from said golf green hole while said angle of said shaft remains greater than said critical angle.

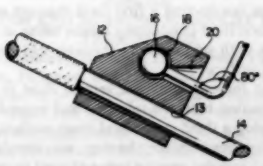
4,486,020

GOLFER'S PRACTICE SWING DEVICE

Brian T. Kane, 1602-2024 Fullerton Ave., North Vancouver, B.C., Canada V7V 3G4, and Richard J. Munn, 4968 Lakeshore Rd., Kelowna, B.C., Canada V1Y MR3

Filed Mar. 25, 1983, Ser. No. 478,671
Claims priority, application Canada, Nov. 8, 1982, 415109
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—191 R **13 Claims**





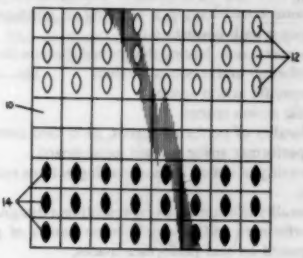
7. A golfer's swing practice device comprising:
(a) support means for vertical positioning of the device;
(b) a rigid elongated rod;
(c) first connection means associated with the support means to mechanically connect the support means to a first end of the rod and enable the rod to swivel freely with respect to the support means; and
(d) clamp means to releasably receive the shaft of a golf club or practice handle and grip a portion of the shaft to secure it against movement relative to said clamp means, said clamp means including second connection means to mechanically connect the clamp means and a second end portion of the rod to permit pivotal movement of the clamp means and the shaft with respect to the rod, the second end portion of said rod and said second connection means being formed such that the second end portion of said rod extends along an axis substantially parallel to that of the shaft when the shaft is gripped by said clamp means at said second connection means.

4,486,021

METHOD OF PLAYING A NAVAL MANEUVERING GAME

Jim S. Karas, Jr., 4454 Arthur St., Fresno, Calif. 93705

Filed Dec. 27, 1982, Ser. No. 437,941
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—255 **8 Claims**



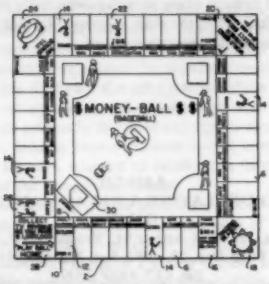
1. A method of playing a game simulating manuevering ships in combat at sea for two (2) players comprising the steps of:
A. providing a first and second set of playing pieces including means for distinguishing the first set of playing pieces from the second set;
B. providing a playing surface comprising a checker board grid having a predetermined number of squares, having a first playing side and a second playing side;
C. spacing the first set of playing pieces on said playing surface distributed in the squares on the first playing side;
D. spacing the second set of playing pieces on said playing surface distributed in the squares on the second playing side;
E. providing chance means, to be manipulated by each player;
F. selecting one of said 2 players to commence play, each player playing in sequence thereafter;
G. manipulating said chance means by said selected player such that certain indicia is displayed on the upper face of said chance means, the displayed indicia being related to the amount of movement permitted by the playing pieces;
H. moving said playing pieces a number of squares corresponding to said displayed indicia;
I. said selected player moving his playing pieces so as to place at least two (2) of his playing pieces in the same square occupied by one (1) of the playing pieces of the other player; such that the occupation of a square by said selected player's at least two pieces results in the capture of said other player's one piece;
J. repeating said sequence of play of said players until one player, repeating the sequence of play, captures all the playing pieces of the other player.

4,486,022

SPORTS BOARD GAMES

Arthur R. Dixon, 3463 Tully Rd., San Jose, Calif. 98148

Filed Feb. 18, 1983, Ser. No. 467,733
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—256 **11 Claims**



1. A sports board game wherein players attempt to maximize their financial worth comprising in combination,

(a) a game board having a plurality of contiguous spaces forming a path consisting of,

performer spaces having designated thereon the name of a performer and monetary values

non-specific action spaces

specific action spaces

(b) a plurality of performer cards, each card corresponding to a performer space on said game board,

(c) a plurality of action cards directing actions related to the game,

(d) a plurality of team cards representing a designated group of performers and having thereon names of performers designated on said performer spaces,

(e) a plurality of stadium replicas,

(f) a plurality of stadium cards having data thereon indicating monetary values for performers higher than the monetary values marked on said performer spaces whereby a player who acquires a group of the performers listed on said team cards may place said stadium replicas on performer spaces and be entitled to increased income from opponents,

(g) a player token for each player to designate movement along the path of the board,

(h) chance means for determining the movement of the player tokens along the path of the board.

4,486,023

EDUCATIONAL GAME DEVICE OF THE COLORED PATTERN TYPE

Judith M. Tomoff, 193 Dover, Pontiac, Mich. 48054

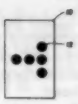
Filed May 9, 1983, Ser. No. 493,080
Int. Cl.³ A63B *67/00*
U.S. Cl. 273—348 **7 Claims**

1. An educational game device comprising;

a plurality of cards, each bearing a different arrangement of colored elements;

a plurality of target elements for duplicating said arrangement of colored elements on a separate flat playing surface;

a die having a plurality of colored faces each corresponding to a different one of said element colors for selecting one of said elements as an individual target; and



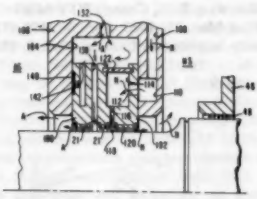
a projectile for hitting the individual selected target elements.

4,486,024

DUAL-RING GLAND SEAL FOR DYNAMOELECTRIC MACHINE ROTOR

Glenn D. Cooper, North Huntingdon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 17, 1983, Ser. No. 495,551
Int. Cl.³ F16J *15/48, 15/40*
U.S. Cl. 277—3 **20 Claims**



1. A seal for a rotating shaft, comprising:

a first ring having a first inner cylindrical surface;

a second ring having a second inner cylindrical surface, said second inner cylindrical surface having an opening therethrough, said first and second rings being shaped to fit around said rotating shaft with a clearance between said shaft and said first and second inner cylindrical surfaces, said first and second inner cylindrical surfaces being disposed in coaxial association with each other;

first means for conducting a first fluid through said second ring, said first fluid conducting means being in fluid communication with said opening through said second inner cylindrical surface;

second means for conducting a second fluid in a radially inward direction between said first and second rings;

a bracket having a third cylindrical inner surface, said third cylindrical inner surface having an annular groove therein, said annular groove being shaped to receive said first and second rings, said annular groove being shaped to permit said first and second rings to move radially within said annular groove;

third means for conducting said second fluid from an external source into said annular groove, said third fluid conducting means being in fluid communication with said second fluid conducting means; and

fourth means for conducting said first fluid from an external source into said annular groove, said fourth fluid conduct-

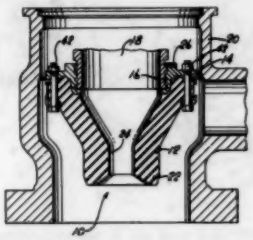
ing means being in fluid communication with said first fluid conducting means.

4,486,025

STRIPPER PACKER

Vaughn R. Johnston, Washington, Pa., assignor to Washington Rotating Control Heads, Inc., Washington, Pa.

Filed Mar. 5, 1984, Ser. No. 586,318
Int. Cl.³ F16J *15/56*
U.S. Cl. 277—31 **8 Claims**



1. A stripper packer adapted to be secured to the rotary spindle of a drilling head comprising:

an annular collar adapted to be secured to such a rotary spindle;

a stripper rubber carried adjacent its upper end by said collar and extending downwardly therefrom; said collar including a sealing surface having mutually-coaxial, vertically, spaced-apart, radially inner and outer annular seal surface portions and a vertically-inclined, radially-outwardly facing annular seal surface portion connecting said radially-inner and radially-outer surface portions;

the vertically higher of said radially inner and outer surface portions including an annular recess formed coaxially therewith;

a clamping annulus cooperable with said collar for compressively clamping said stripper rubber thereto;

said stripper rubber including a mating surface which conforms closely with said sealing surface; and

selectively releasable compression clamping means located radially outward of said annular recess and cooperable with said collar and said clamping annulus to compressively clamp said rubber to said collar in a manner that said mating surface is maintained in substantially continuous, releasable face sealing engagement with the said sealing surface when said stripper rubber is deformed by the compressive clamping thereof.

4,486,026

SEALING AND BEARING MEANS BY USE OF FERROFLUID

Kyozaburo Furumura, Ninomiya; Hiromi Sugi, Fujisawa; Yasuo Murakami, Fujisawa, and Hiromitsu Asai, Fujisawa, all of Japan, assignors to Nippon Seiko K.K., Tokyo, Japan

Filed Feb. 3, 1983, Ser. No. 463,572
Claims priority, application Japan, Feb. 10, 1982, 57-18840; Feb. 10, 1982, 57-18841; Feb. 10, 1982, 57-18842
Int. Cl.³ F16J *15/16, 15/40*
U.S. Cl. 277—80 **9 Claims**

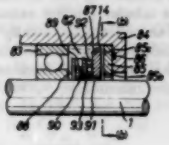
1. Sealing and bearing means for use of ferrofluid comprising:

a thrust support disc for preventing a thrust movement of a rotary shaft;

a magnet disc opposing to the thrust support disc, the magnet disc being made of a normal magnet or a plastic-contained magnet;

either one of the thrust support disc and the magnet disc being fixed with the rotary shaft, the both discs enclosing the rotary shaft concentrically;

a ferrofluid being retained in a gap formed between opposing surfaces of the thrust support disc and the magnet disc; and



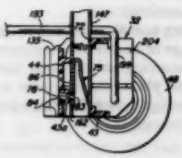
either one of the thrust support disc and the magnet disc being, at its surface sliding with the other one, provided with grooves for dynamic pressure of the ferrofluid.

4,486,027

LUGGAGE CARRIER

Richard M. Carrigan, 3538 W. Lyons, Evanston, Ill. 60203

Division of Ser. No. 382,174, May 26, 1982, Pat. No. 4,431,211, which is a continuation of Ser. No. 127,798, Mar. 6, 1980, abandoned. This application Aug. 24, 1983, Ser. No. 525,838
Int. Cl.³ B62B *1/06*
U.S. Cl. 280—655 **5 Claims**



1. A carrier for transporting luggage, and the like, comprising an elongated, horizontally extending base member having wheels at the outer ends thereof for engaging a support surface, said wheels having hubs for receiving an axle, elongated, upright frame means extending generally vertically upwardly from said base member, a support frame member carried by said base member for supporting one or more items to be transported on said carrier, said support frame member having laterally spaced, horizontally extending end sections, and said end sections extend through mounting bores in said base member and the hubs of said wheels, whereby said horizontally extending end sections pivotally connect said support frame member to said base member and serve as axles for said wheels.

4,486,028

UPPER SUPPORT STRUCTURE FOR FRONT WHEEL SUSPENSION OF AUTOMOBILE

Haruhiko Tanahashi, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

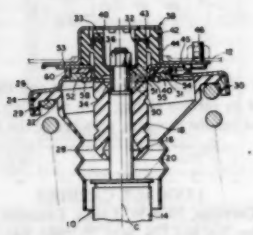
Filed Dec. 22, 1982, Ser. No. 452,133
Int. Cl.³ B60G *7/02*
U.S. Cl. 280—668 **7 Claims**

1. An upper support structure for a front wheel suspension of an automobile which transmits forces from a road to a body of the automobile through a piston rod of a shock absorber, a bound stopper disposed to surround the piston rod and a coil spring disposed to surround said shock absorber and which is received on an upper end thereof by a spring seat, comprising:

a first support integrally including a first flange provided in a center portion thereof with an opening through which a tool can be inserted and a second flange fixed to said body;

a second support having a first flange directly contacting an upper end portion of said bound stopper and provided in a center portion thereof with an opening through which an upper end portion of said piston rod extends and which is spaced from said first flange of said first support axially of said piston rod,

a second flange contacting said second flange of said first support and a tubular portion extending from said first flange of said second support axially of said piston rod to said second flange of said second support and through which a force is transmitted from said bound stopper to said body of the automobile;



a rubber mount disposed between and fixedly secured to said first support and said second support;

a connecting member fixedly secured to the rubber mount and which is mounted to the upper end of said piston rod and through which the force from said piston rod to said body is transmitted; and

a plastic bearing seat disposed at an underside portion of said second flange of said second support and having a tubular portion contacting said tubular portion of said second support, said plastic bearing seat contacting said spring seat and through which the force is transmitted from said coil spring to said body.

4,486,029

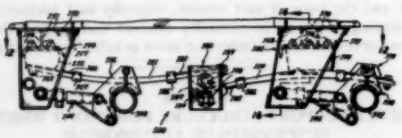
HEAVY VEHICLE SUSPENSION ASSEMBLY WITH FREE FLOATING SPRINGS AND AXLE STABILIZING TORQUE ROD

John E. Raidel, Rte. 9, Box 400-M, Springfield, Mo. 65804

Division of Ser. No. 406,023, Aug. 6, 1982, Pat. No. 4,420,171, which is a division of Ser. No. 196,696, Oct. 14, 1980, Pat. No. 4,371,189. This application Jul. 8, 1983, Ser. No. 512,038

Int. Cl.³ B60G *5/04*

U.S. Cl. 280—682 **15 Claims**



1. A vehicle suspension for supporting a vehicle chassis on at least two vehicle axles comprising a first and second hanger depending downwardly from the chassis, a free floating shackle assembly, a first leaf spring bearing upwardly on the first hanger and a first bushing mounting an end of said first leaf spring to and bearing upwardly on the shackle assembly, a second leaf spring bearing upwardly on the second hanger with an end bearing downwardly on the second axle and a second bushing mounting an end of said second leaf spring to and bearing downwardly on the shackle, and said bushings having means to maintain said leaf springs in a load bearing relationship to said axles and permit relative transverse movement therebetween.

4,486,030

REAR SUSPENSION APPARATUS FOR MOTOR VEHICLE

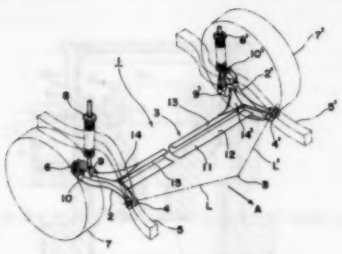
Naoto Takata, and Seita Kanai, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 8, 1982, Ser. No. 447,934

Claims priority, application Japan, Dec. 14, 1981, 56-186977[U]

Int. Cl.³ B60G *21/04*

U.S. Cl. 280—689 **4 Claims**



1. A suspension apparatus for rear wheels of a motor vehicle, comprising:

a pair of first and second trailing arms which are provided at opposite transversal sides of a body of said motor vehicle so as to extend in a longitudinal direction of said body;

said first and said second trailing arms being pivotally supported at forward ends of said first and said second trailing arms, respectively by said body so as to be pivoted in a vertical direction of said body while said rear wheels are rotatably secured to backward ends of said first and said second trailing arms, respectively; and

a torsion beam of substantially U-shaped cross section having a first side portion, a second side portion and a base portion, which is secured to and extends transversely between said first and said second trailing arms so as to be positioned intermediate the forward end and the backward end of each of said first and said second trailing arms such that an opening portion of said torsion beam is oriented forwardly or backwardly in the longitudinal direction of said body;

said first side portion extending in a horizontal direction of said body being disposed below said second side portion extending in the horizontal direction of said body, with said base portion extending substantially in the vertical direction of said body;

said first side portion and said second side portion having a first width and a second width in the longitudinal direction of said body, respectively such that said first width of said first side portion disposed below said second side portion is made larger than said second width of said second side portion.

4,486,031

CHILD RESTRAINT FOR PASSIVE RESTRAINT SYSTEM

J. Ronald Holler, Fraser, and Francis E. Wojciechowski, Mt. Clemens, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 13, 1983, Ser. No. 494,404

Int. Cl.³ B60R *21/10*

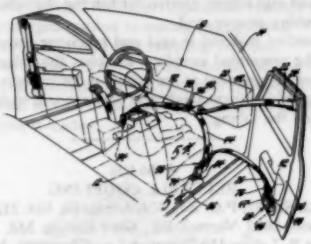
U.S. Cl. 280—802 **2 Claims**

1. In combination with a vehicle seat belt system including a loop belt having a shoulder belt portion fixedly mounted on the door and a lap belt portion mounted on the door by a storage retractor for winding and storing the loop belt upon disconnect of a release buckle connecting the loop belt with a control belt retractably mounted on the inboard side of the seat, an auxil-

iary buckle for conversion of the belt system from adult occupant restraint to child occupant restraint comprising:

a first buckle component including a housing slidable along the lap belt portion;

a second buckle component mounted upon the door adjacent the storage retractor and releasably engageable by the first buckle component to normally establish the first buckle component in line with the storage retractor to enable normal use of the belt system for adult occupant restraint



and to enable passage of the loop belt therethrough for storage by the storage retractor upon disconnect of the release buckle; and

a third buckle component like the second buckle component and mounted upon the vehicle body outboard the seat and engageable by the first buckle component to establish an auxiliary child restraint anchorage of the outboard lap belt portion to shorten the length of the loop belt for restraint of a child upon the seat.

4,486,032

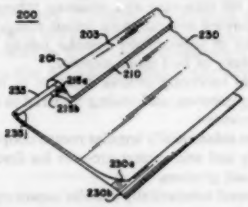
COVER FOLDERS

David J. Leahy, Framingham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Jun. 14, 1982, Ser. No. 387,892

Int. Cl.³ B42D *3/10, 17/00;* B42F *9/00, 1/06*

U.S. Cl. 281—46 **10 Claims**



1. A folder comprising a folded cover and binder for the folder cover, said binder comprising

an elongated bar having a pair of oppositely facing side walls defining an interior slot along the elongated bar's length, said side walls converging at a slit, and

at least one member protruding into the slot from the interior side of at least one of said side walls, the member protruding in a direction away from the slit and the member forming an obtuse angle at its intersection with a section of the interior side of the side wall from which said member protrudes, wherein

the folded cover comprises a sheet folded to form a pair of sheets having a common fold line and the pair of sheets folded again to form an overlapping flap terminating along said common fold line,

the body of each of the pair of said sheets separable from one another, wherein the folded cover is inserted into the elongated bar so that the overlapping flap engages the protruding member along said common fold line.

4,486,033

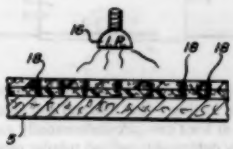
SUBLIMABLE DYE IMAGING OF LOTTERY TICKET AND COMMERCIAL GAME COUPON AND THE LIKE

Michael A. Parrotta, Hamilton Square, N.J., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Jul. 15, 1983, Ser. No. 514,108

Int. Cl.³ G09F *3/02*

U.S. Cl. 283—94 **20 Claims**



1. A process for permanently imaging data on lottery tickets and the like which comprises the steps of:

a. providing an ink receptive, non-shrinking resinous coating on a webbed coupon substrate and heat curing the same;

b. applying to said ink receptive resinous coating imaging data by an ink jet printer using a sublimable dye;

c. drying said dye;

d. applying an ultraviolet curable resinous coating over said dye;

e. curing said ultraviolet curable resinous coating by ultraviolet light;

f. further heating said substrate between about 275° and 400° Fahrenheit causing said dye to permanently sublime into said ink receptive resinous coating and said ultraviolet curable resinous coating.

9. A process for permanently imaging data on a lottery ticket web or the like which comprises the steps of:

a. providing a substrate;

b. applying to said substrate a first ink transparent, non-U.V. curable, non-shrinkable dual function resinous coating having a non-absorbable, sublimable ink surface receptive first stage and an absorbable, sublimable ink surface receptive second stage;

c. heat curing said first coating;

d. applying a sublimable ink to the surface only of said first cured coating;

e. rapidly drying said ink while preventing sublimation of said ink;

f. applying a second ink transparent dual function U.V. curable resinous coating having a non-absorbable, sublimable ink surface receptive first stage and an absorbable ink surface receptive second stage to said first cured sublimable ink non-U.V. curable resinous coating and over said rapidly dried ink;

g. applying U.V. light to said second resinous coating for curing the same and locking said sublimable ink between said first and second cured resinous coating while said first and second coatings are in said first non-absorbable sublimable stage thereby producing a finally coated web;

h. applying heat to said finally coated web of a sufficient temperature and for a sufficient time period to cause said first and second coating to become absorptive while simultaneously subliming said ink into said first and second cured resinous coatings;

i. thereby providing a tamper proof lottery ticket web or the like.

4,486,034

SLEEVE COUPLING FOR HOSES OR THE LIKE

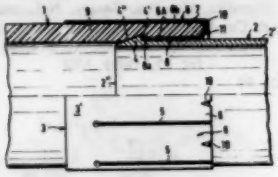
Heinz Sauer, Ronneburg, Fed. Rep. of Germany, assignor to Rasmussen GmbH, Maintal, Fed. Rep. of Germany

Filed Aug. 26, 1982, Ser. No. 411,990

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1981, 3136018

Int. Cl.³ F16L *33/22*

U.S. Cl. 285—242 20 Claims



1. A coupling comprising an at least substantially rigid first tubular member having a first free end and an external surface provided with at least one circumferentially extending rib; an at least partially deformable second tubular member surrounding said surface and having a second free end, said rib being disposed between said free ends and being spaced apart from said second free end; and a clamping device for holding said tubular members together, said device including a circumferentially complete tubular portion tightly surrounding said second member and an annulus of elastic prongs at least substantially parallel to the axis of said first member and surrounding said second member in the region of said rib as well as between said rib and said second free end, said prongs having end portions confining and clampingly engaging said second member in the region of said second free end and said end portions inluding legs disposed between said tubular members and being in contact with said external surface, said rib being disposed between said circumferentially complete tubular portion and said second free end, as considered in the axial direction of said first tubular member, and said legs contacting said external surface between said rib and said second free end.

4,486,035

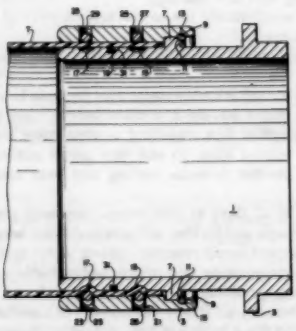
REUSABLE COUPLING

Francis J. Storke, P. O. Box 424, Annapolis, Md. 21204

Filed Sep. 29, 1982, Ser. No. 428,051

Int. Cl.³ F16L *33/00, 21/06*

U.S. Cl. 285—253 13 Claims



1. A coupling for use with flexible hose, tubing and the like comprising:

(a) an inner member,

(b) an outer member substantially surrounding said inner member, said inner and outer members having tubing receiving ends,

(c) means for receiving and retaining tubing, between said members said receiving and retaining means comprising:

1. at least one first substantially annular tubing groove on said inner member,
2. a substantially annular seal receiving groove on said inner member between said tubing receiving end and said tubing groove,
3. substantially annular means cooperating with the tubing and said tubing groove for forcing the tubing into said tubing groove, and
4. sealing material in said seal receiving groove wherein the assembled coupling stretches the tubing over the sealing material as the tubing is forced into said tubing groove to form a tight seal between said sealing material and the tubing.

4,486,036

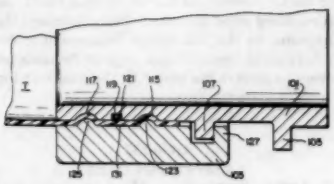
REUSABLE COUPLING

Francis J. Storke, P.O. Box 424, Annapolis, Md. 21204; Carl L. Grayson, 2012 Norman Rd., Glen Burnie, Md. 21061, and Ernest B. Loker, 110 Tarragon La., Edgewater, Md. 21037

Filed Sep. 29, 1982, Ser. No. 428,053

Int. Cl.³ F16L *33/00, 21/06*

U.S. Cl. 285—253 10 Claims



1. A coupling for use with flexible hose, tubing and the like comprising:

(a) an inner member,

(b) an outer member substantially surrounding said inner member,

(c) means for receiving and retaining tubing therebetween, said receiving and retaining means comprising:

(1) a pair of substantially annular tubing grooves on the periphery of said inner member,

(2) a seal receiving groove adjacent at least one of said tubing grooves, and sealing material in said seal receiving groove,

(3) a first substantially annular means cooperating with the tubing and said tubing grooves for forcing said tubing into said grooves,

(4) a second substantially annular means opposite said seal receiving groove cooperating with said tubing and said sealing material for exerting a force on said sealing material.

4,486,037

PIPE CONNECTORS

Keith Shotbolt, 62, Howards Wood Dr., Gerrards Cross, Buckinghamshire, England

Continuation of Ser. No. 898,415, Apr. 20, 1978, abandoned. This application Aug. 27, 1980, Ser. No. 181,735

Claims priority, application United Kingdom, Jul. 6, 1977, 28387/77

Int. Cl.³ F16L *27/04*

U.S. Cl. 285—261 21 Claims

1. A pipe connection for joining two pipes comprising:

(a) first and second coupling members, said first coupling member having a bore axis,

(b) means at one end of each of said coupling members to

facilitate connecting the respective coupling member to one of the pipes to be joined,

(c) an enlarged portion at the other end of said first coupling member, said enlarged portion having at least one diametrical axis, orthogonal to said line axis

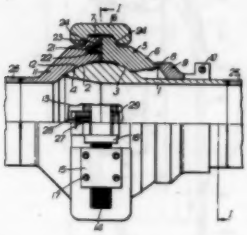
(d) concentric forward and rearward facing part-spherical external surfaces on said enlarged portion,

(e) a housing at the other end of said second coupling member,

(f) a part-spherical internal surface on said housing able to accept said forward facing part-spherical external surface of said enlarged portion in mating engagement,

(g) a hub carried by said first coupling member,

(h) a part-spherical forward facing internal surface on said hub slidingly engaged on said rearward facing part-spherical external surface of said enlarged portion at least before connection is made,



(i) tensioning means effective to engage said hub and said housing and operable to pull said hub axially towards said housing of said second coupling member and to hold it with said enlarged portion in mating engagement with said part-spherical internal surface of said housing, and

(j) means on said first coupling member between said one end and said enlarged portion thereof to maintain the hub in sliding contact with said rearward facing part-spherical external surface of said enlarged portion before operation of said tensioning means and effective to allow said hub to rotate about the bore axis of the first coupling member and to swivel about any orthogonal diametrical axis of said enlarged portion before and after immersion of the first coupling member in water and transportation to a depth where connection is made in a hyperbaric environment.

4,486,038

ENERGY STORAGE

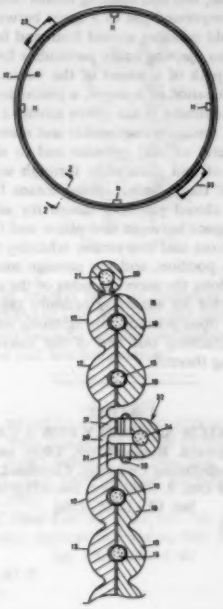
Gordon L. Bredenkamp, Roodepoort, South Africa, assignor to Crucible Society Anonyme, Luxembourg, Luxembourg

Filed Aug. 19, 1982, Ser. No. 409,658

Int. Cl.³ F16C *32/04*

U.S. Cl. 290—1 R **8 Claims**

1. A method of storing energy by causing a large diameter mass to spin about a central axis, applying the energy to be stored to the spinning of the mass and withdrawing energy from the spinning mass as and when required, with the improvement of spinning the mass in the form of a hoop about the central axis, restraining the hoop to a fixed orbit about the central axis by means of electromagnetic forces, positioning a circular stator mounted in fixed relation about the central axis, positioning the hoop and the stator in spaced relation to form



an annular gap therebetween, and controlling the current to keep the dimensions of the gap constant.

4,486,039

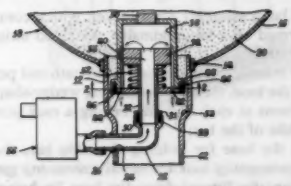
INCREASING TRACTION OF ROLLING WHEEL

Murray L. Jayne, 1906 NE. River Ct., Jensen Beach, Fla. 33457

Filed Jun. 29, 1982, Ser. No. 393,445

Int. Cl.³ B60B *39/06, 39/08;* **B61C** *15/10*

U.S. Cl. 291—3 **8 Claims**



1. In a device for delivering particulate from a source thereof to a wheel of a vehicle; the combination of a sleeve having means for releasable attachment at its upper end to said source, said sleeve having its lower end aligned to deliver said particulate to or in front of said wheel, normally closed valve means carried by the sleeve for preventing flow of particulate through the sleeve when the valve means are closed, whereby the sleeve and valve means may as a unit be attached to and detached from the source, and means for opening said valve means said valve means comprising a cylinder, a piston anchored to the sleeve and slideably fitted against the internal diameter of said cylinder, a cap secured to one end of said cylinder externally thereof, the outer diameter of said cap being engageable with a facing internal annular seat of said

sleeve, the cylinder being moveable axially thereof relative to the sleeve, and spring means compressed between the piston and the inner side of the cap for biasing the cap into engagement with said seat, and said opening means comprising means for delivering compressed gas to a space between said piston and the end of said cylinder spaced from and facing the cap.

5. In a device for ejecting gritty particulate from a tank on a vehicle into the path of a wheel of the vehicle rolling on a surface; the combination of a sleeve, a piston anchored to said sleeve, a floating cylinder in the sleeve having a snug slideable fit on said piston, mutually engageable seat means on the radially outer perimeter of said cylinder and in said sleeve for preventing flow of said particulate through said sleeve in a closed position of the cylinder, spring means for biasing the cylinder to said closed position, means for admitting compressed gas to a space between said piston and the end of said cylinder remote from said seat means, whereby the cylinder is actuated to open position, and gas passage means extending from said space along the inner diameter of the cylinder to the opposite end thereof for admitting pressure gas thereto when the cylinder is in open position, for agitating said particulate, and means for attaching one end of the sleeve to the tank around an opening thereof.

4,486,040

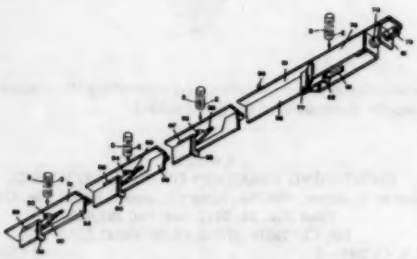
SLIDE LATCH ASSEMBLY FOR A CASKET

William J. Strangward, Rocky River, Ohio, assignor to The Langenau Manufacturing Company, Cleveland, Ohio

Filed Oct. 9, 1980, Ser. No. 195,378

Int. Cl.³ E05C *1/06*

U.S. Cl. 292—160 **9 Claims**



1. A slide latch assembly for a casket, which comprises:

a base formed of a longitudinally elongated strip of sheet metal material;

a slide bar extending longitudinally beneath and perpendicularly to the base, the slide bar having wedge-shaped securing portions at each end and having a rack portion near the middle of the bar;

means on the base for holding the slide bar, the holding means comprising four U-shaped restraining guide members integrally formed from the base by being stamped therefrom and bent downwardly to extend perpendicularly from the base, each of the guide members having a slot therein which is approximately the same as and slightly larger than the cross-sectional shape of the slide bar, the slide bar being inserted through the slots in the guide members and being freely movable therein in a longitudinal direction;

means for moving the slide bar comprising a pinion engaging the rack portion, a shaft connected to the pinion, and a handle attachment connected to the pinion by the shaft; and

a support for the moving means comprising a U-shaped member extending beneath the slide bar and connected at each end to the base on each side of the slide bar at approximately the middle of the base and extending perpendicularly from the base and having an opening in which the shaft is mounted.

4,486,041

DOOR HANDLE UNIT

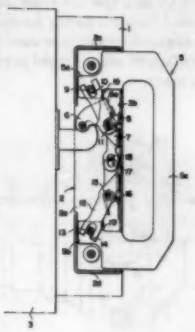
Kunihiko Takasaki, Tokyo, Japan, assignor to Takigen Seizou Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1983, Ser. No. 475,873

Claims priority, application Japan, Mar. 23, 1982, 57-39456[U]

Int. Cl.³ E05C *3/08*

U.S. Cl. 292—221 **3 Claims**



1. A door handle unit comprising; a case secured to a door; a keeper attached to a fixed frame member such as a compartment body; a movable handle linearly slidably fitted in said case; a latch pivoted to said case and coming into engagement with and disengagement from said keeper; an actuating link having one end portion coupled to an inner end portion of said movable handle; and a spring adapted to urge and rotate said latch in the direction to be engaged with and held by said keeper, in which said latch and said actuating link are operatively engaged with each other, and said latch is rotated against a resilient force of said spring along with a linear pulling movement of said movable handle, thereby to release engagement of said latch with said keeper.

4,486,042

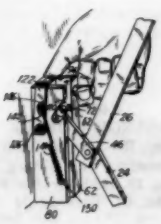
GATE LATCH

Jeffrey Chee, 118-65 Metropolitan Ave., Queens, N.Y. 11415

Filed Jul. 26, 1982, Ser. No. 402,127

Int. Cl.³ E05B *15/02*; E05C *19/10*

U.S. Cl. 292—246 **10 Claims**



1. A latch apparatus comprising a latch bracket having a pair of spaced apart opposed leg portions with at least one of said leg portions having at least one slot, a latch bar proportioned to enter between said leg portions, with said latch bar having an upper end projecting above said with said latch bar having an upper end projecting above said latch bracket, a projecting pin

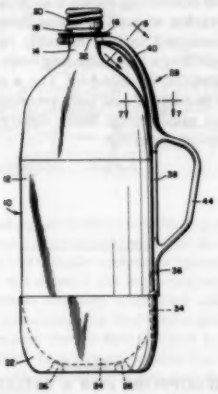
mounted on said latch bar and disposed to enter said slot when said latch bar enters between said leg portions, catch means pivotally mounted on said latch bracket capable of a first position overlying said upper end of said latch bar, and spring means connecting said catch means and said latch bracket and urging said catch means toward said first position.

4,486,043

REUSABLE PLASTIC BOTTLE HANDLE

John M. Rais, P.O. Box 1781, Darien, Conn. 06820

Filed Jan. 20, 1984, Ser. No. 572,447
Int. Cl.³ B65D *23/10*
U.S. Cl. 294—27 H **6 Claims**



1. A reusable handle adapted to be secured to a bottle having an annular side wall terminating in a neck at one end and a bottom secured to a cup-like base at its opposite end, said handle comprising:

a substantially vertical prong-like first portion at one end of said handle adapted to be inserted between the annular side wall of a bottle and the cup-like base portion thereof, said prong-like member having an convex-concave arcuate portion extending outwardly from the vertical plane thereof for contact with the side wall of the cup-like base bottle to generate a clamping force on the handle at the prong end thereof,

a substantially horizontal hook-like second end portion at the opposite end of said handle adapted to encompass the neck of a bottle, and

an intermediate strap-like portion joining said hook-like second end portion with said prong-like first end portion, said intermediate strap-like portion including a finger gripping loop intermediate the ends thereof.

4,486,044

APPARATUS FOR SUPPORTING AND TRANSPORTING A GAS CYLINDER

Harris K. Gordon, Cheltenham, Pa., and Howard Myers, Whippany, N.J., assignors to Tank-Tote Co., Cheltenham, Pa.

Filed Aug. 6, 1982, Ser. No. 405,894
Int. Cl.³ B65D *61/00*
U.S. Cl. 294—31.2 **7 Claims**

1. An apparatus for supporting and transporting a gas cylinder or the like, a support having a base and cylinder retaining means coupled to said base and extending upwardly therefrom, said cylinder retaining means comprising an upright support member affixed to said base and cylinder-encircling means coupled to said upright support member, said cylinder encircling means having means thereon for encircling and clamping a cylinder when the apparatus is operatively disposed, and said upright support member comprising a handle portion for carrying the apparatus and bracket portions adapted to receive hose for storage, said upright support member comprising a first strip-like element affixed to said base, and said handle

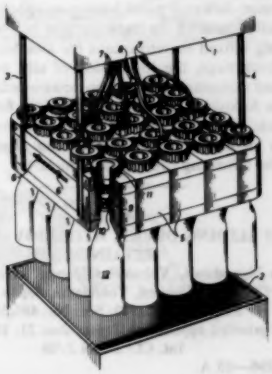
portion and said bracket portions comprising a second strip-like element affixed to said first strip-like element, said second strip-like element having a sinuous configuration which defines said handle and said bracket portions.

4,486,045

BOTTLE-GRIPPING DEVICE

Lars E. Trygg, Villa Solvik 310, S-770 13 Grangärde, Sweden

PCT No. PCT/SE82/00044, § 371 Date Sep. 22, 1982, § 102(e) Date Sep. 22, 1982, PCT Pub. No. WO82/02871, PCT Pub. Date Sep. 2, 1982
PCT Filed Feb. 11, 1982, Ser. No. 433,475
Claims priority, application Sweden, Feb. 20, 1981, 8101156
Int. Cl.³ B66C *1/46*
U.S. Cl. 294—87 R **6 Claims**



1. A gripping device of the kind including a support sleeve (9) having radially projecting flanges (18) and a substantially cylindrical muff (10) of elastic material mounted on said flanges, and air passages (20; 21; 32) for supplying pressurized air to the space between the muff (10) and the support sleeve (9) for deformation of the muff, characterized in that the end portions (19) of the muff (10) are so designed that when mounting the muff on said support sleeve (9) said end portions are drawn over the flanges (18) of the sleeve to surround the flanges, that the support sleeve with the muff mounted thereon is arranged to be carried by a holder means (5; 33) so designed that between the respective flange (18) of the sleeve and a continuous wall surface of the holder means (5; 33) there is obtained a passage having a width less than the thickness of the end portion (19) of the muff (10) located adjacent the underside of the flange (18), that said end portions each have a surface arranged to seal against said wall surface so that the end por-

tions (19) together with the support sleeve (9) and said wall surface of the holder means (5; 33) define a confined space for connection to a compressed-air supply and communicating with the space between the muff (10) and the support sleeve (9) through openings (21) in the support sleeve, and in that each end portion (19) has a surface acted upon by the pressure in said confined space in a manner to improve the seal between the end portions and said wall surface when the pressure in said space increases, whereby the frictional force retaining the muff (10) in place increases as the pressure tending to displace the muff increases.

4,486,046

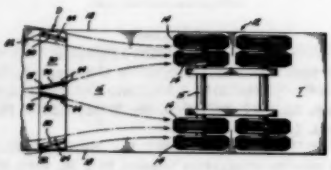
UNDERCARRIAGE AIRSTREAM DEFLECTOR ASSEMBLY FOR TRUCK TRAILERS AND THE LIKE

Michael L. Whitney, 26918-210th SE., Kent, Wash. 98031; William G. Blakley, 1810 S. 134th St., and Larry W. Blakley, 11729-14th Ave. S., both of Seattle, Wash. 98168

Filed Sep. 29, 1982, Ser. No. 431,691

Int. Cl.³ B62D *35/02*

U.S. Cl. 296—1 S **14 Claims**



1. An airstream deflector assembly comprising an essentially flat airstream deflector panel having an upper side facing and substantially spanning the undercarriage of a wheeled vehicle and having affixed thereto means for attaching said panel to said undercarriage, the lower side of said panel facing the ground and directing the airstream downwardly and primarily below the following axle and centers of the following tires of the vehicle, the panel having affixed thereto a plurality of airstream deflectors concentrating the airstream laterally toward the following tires of the vehicle.

4,486,047

SEAT SLIDING DEVICE WITH MOVABLE RAIL RETAINER

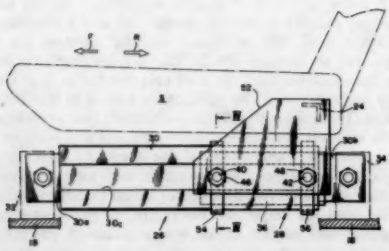
Hideyuki Nagashima, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 6, 1983, Ser. No. 456,332

Claims priority, application Japan, Jan. 21, 1982, 57-6602[U]

Int. Cl.³ B60N *1/08*

U.S. Cl. 296—65 A **7 Claims**



1. A seat sliding device of a motor vehicle, comprising:

a stationary rail secured to the floor of said vehicle in a manner to define an elongate clearance between a major portion of said stationary rail and the floor of said vehicle;

a movable rail to which a seat is securely mounted, said movable rail being axially slidably engaged with said stationary rail so that movement of said movable rail relative to said stationary rail induces movement of said seat relative to the vehicle floor;

at least one rigid frame member having an extension which embraces said stationary rail by having at least a portion passed through said elongate clearance; and

connecting means securely connecting said rigid frame member to said movable rail so that said rigid frame member is movable with said movable rail and is held embracing the stationary rail;

wherein said connecting means is located at a postion where a rigid bracket secured to a seat frame of the seat is directly connected to said movable rail, said connecting means including a bolt extending from said movable rail, a spacer mounted on said bolt, and a nut engaged with a threaded portion of said bolt, respective portions of said frame and said bracket being tightly disposed between said spacer and said nut.

4,486,048

LEG SUPPORT FOR A WHEELCHAIR

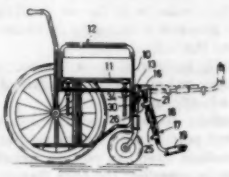
Wilhelm Meyer, Vlotho, Fed. Rep. of Germany, assignor to Meyra Krankenfahrzeug-fabrik Wilhelm Meyer GmbH & Co. KG, Vlotho, Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,605

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043150

Int. Cl.³ A47C *7/50*

U.S. Cl. 297—433 **15 Claims**



1. In a wheelchair having a seat and front frame, the improvement comprising the provision of a leg support therefor, said support having a vertical supporting tube, which is detachably mountable on said front frame of said wheelchair, the upper end of said supporting tube having a horizontal arm rigidly mounted thereon and extending forwardly therefrom in the direction of travel of the wheelchair, a leg support carrier, supporting a foot-plate and a calf-plate, wherein the leg support carrier is formed by an external telescopic member and an internal telescopic member inserted into the external telescopic member, the members having respective upper end portions, means pivotably mounting the upper end of the inner telescopic member to an intermediate portion of the horizontal arm, and lever means having one end pivotably mounted to the upper end of the external telescopic member, the lever means further having an other end pivotably mounted to a forwardly-extending portion of the horizontal arm.

4,486,049

HEAVY BREAKING GIANT EXCAVATING EQUIPMENT

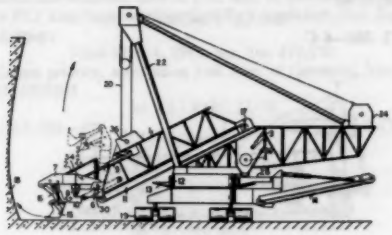
Wolfgang Luhrich, Bad Schwartau, and Dieter Hoffmann, Lübeck, both of Fed. Rep. of Germany, assignors to O & K Orenstein & Koppel Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 412,927

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1981, 3134642

Int. Cl.³ E21C *47/00*

U.S. Cl. 299—7 7 Claims



1. In a heavy breaking giant excavator having a main boom with a feed chute and conveyor equipment at one end thereof and sifting, crushing and transfer equipment operatively associated with the other end thereof, the improvement comprising an excavating apparatus operably associated with said main boom and disposed proximate said feed chute, said excavating apparatus being movable from a first position for excavating and collecting material, to a second position for disposing of said excavated and collected material into said feed chute.

4,486,050

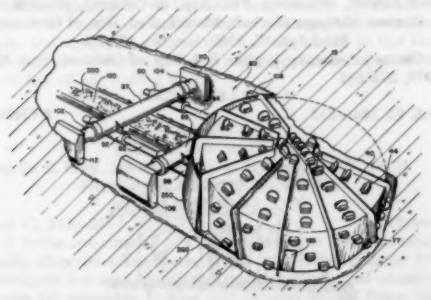
RECTANGULAR TUNNEL BORING MACHINE AND METHOD

Larry L. Snyder, Golden, Colo., assignor to Harrison Western Corporation, Lakewood, Colo.

Filed Feb. 8, 1983, Ser. No. 463,894

Int. Cl.³ E21D *9/10*

U.S. Cl. 299—18 44 Claims



30. A machine for boring a tunnel having an end face wall, a roof wall, a bottom wall, and opposite side walls which comprises:

a rotatable cutting wheel means having an annular peripheral wall supporting a plurality of cutting devices and a generally convex shaped upper wall supporting a plurality of cutting devices and being rotatable about an axis of rotation which is inclined in a forward direction relative to a plane perpendicular to the longitudinal axis of the tunnel for simultaneously cutting the tunnel face along two intersecting surfaces defined by said cutting devices on said annular peripheral wall and said cutting devices on said convex-shape upper wall;

cutting wheel support means centrally mounted in said cutting wheel means for rotatably supporting said cutting wheel means;

support shoe means mounted beneath said cutting wheel support means for movably supporting said cutting wheel means on the tunnel floor;

drive motor means operatively associated with said cutting wheel means for causing rotation of said cutting wheel means relative to the tunnel face and said cutting wheel support means;

thrust means connected in thrust transmitting relationship with said cutting wheel support means for advancing said cutting wheel and said support shoe means toward the tunnel face; and

gripping means associated with said thrust means for gripping engagement with the opposite tunnel side walls to prevent axial rearward movement as said cutting wheel means and cutting wheel support means and said support shoe means are advanced toward the tunnel face.

4,486,051

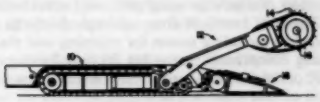
MINING MACHINE

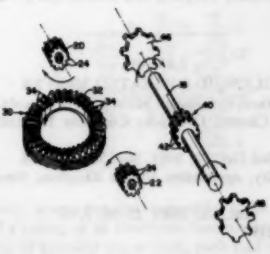
Harry R. Becker, Utica, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Nov. 19, 1982, Ser. No. 442,988

Int. Cl.³ E21C *25/06*

U.S. Cl. 299—78 9 Claims





1. A mining machine comprising:

a mobile base,

a cutting head assembly at a forward end of said mobile base, having a cutter drum rotatable about an output shaft disposed along the longitudinal axis of the cutter drum,

means for driving the cutter drum comprising:

at least one motor for driving at lease one toothed motor pinion,

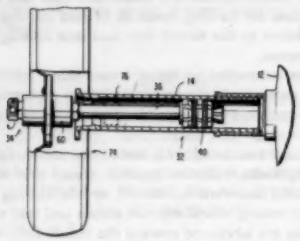
a generally cylindrical combination gear having generally circular end surfaces, a second gear selected from the group consisting of a bevel gear and a face gear, formed in at least one of the end surfaces having teeth adapted to mate with and be driven by the at least one toothed motor pinion, a worm gear formed in the outer cylindrical surface of the combination gear and disposed in driving engagement with the teeth of an output gear integrally and coaxially connected to the output shaft of the cutting drum.

4,486,052

DEVICE TO PERMIT MOVEMENT OF VEHICLE NOT HAVING FRONT OR REAR AXLE

Harry L. Taggart, Jr., 4031 MacArthur Ave., Richmond, Va. 23227

Filed Feb. 22, 1982, Ser. No. 351,283
Int. Cl.³ B60B 35/02, 35/04, 35/10
U.S. Cl. 301—130 17 Claims



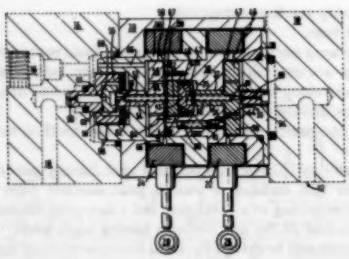
7. Temporary substitute means for a conventional axle assembly of a motor vehicle, said conventional axle assembly including an elongated axle having one end normally matable with the vehicle's differential gear and normally received within an elongated axle housing, a flange at the other end of the axle for mounting a wheel supporting a tire, and a bearing at said other end of the axle for rotatably supporting the axle in the axle housing, said means comprising an elongated shaft having a first end and a second end, said first end of said shaft insertable into said axle housing after said conventional axle assembly has been removed from said axle housing, said first end of said shaft including means for retaining said shaft in said axle housing comprising means for frictionally engaging the inner wall of said axle housing, and means formed at said second end of said shaft for mounting a wheel on said shaft, said mounting means comprising a hub, a wheel flange extending radially from said hub for mounting a wheel thereon, and bearings for rotatably coupling said second end of said shaft to said hub.

4,486,053

SOLENOID OPERATED VALVES

Michael J. Hawker, and Joseph Mair, both of Lincoln, England, assignors to Clayton Dewandre Company Limited, Lincoln, England

Filed Oct. 28, 1981, Ser. No. 315,876
Claims priority, application United Kingdom, Nov. 4, 1980, 8035323
Int. Cl.³ B60T 13/68, 8/08
U.S. Cl. 303—119 8 Claims



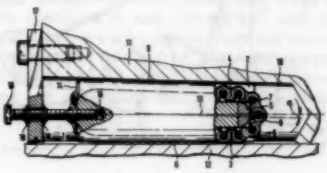
1. An hydraulic control valve comprising a solenoid operated valve having a solenoid core defining a chamber for fluid under pressure, and a valve member movable by the armature of the solenoid which is slidable within the core, and a narrow groove formed around the core and locally reducing the radial thickness of the pressure chamber wall so as to establish a preferential flux path through the armature.

4,486,054

RECIRCULATING ROLLING BEARING

Jürgen Oetjen, Herzogenaurach, and Erich Lunz, Lonnerstadt, both of Fed. Rep. of Germany, assignors to INA Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Jul. 28, 1983, Ser. No. 518,293
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1982, 3228762
Int. Cl.³ F16C 29/06
U.S. Cl. 308—6 C 4 Claims



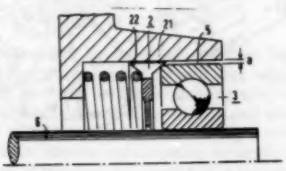
1. A recirculating rolling bearing for the longitudinally moveable mounting of an element with a linear surface comprising a bearing body having two opposite straight race sections limited by lateral flanges connected by two curved end deflecting sections connecting the ends of the straight sections to form a closed raceway and rolling bodies in said closed raceway rotating about an axis, the bearing body having a cylindrical outer contour and is insertable into a corresponding cylindrical bore of a housing which bore is open toward the element to be supported in the area of one straight race section opposite said element, the common axis of the bearing body and the housing bore having a slight inclination relative to the straight race section opposite the element to be supported.

4,486,055

DEVICE FOR COMPENSATING FOR RADIAL PLAY OF A BALL BEARING IN A BEARING BORE

Rolf Rohloff, Würzburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 12, 1980, Ser. No. 158,738
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926541
Int. Cl.³ F16C 27/04
U.S. Cl. 384—535 8 Claims



1. In a disc for use in front of an end face of a ball bearing assembly in a bearing bore for compensating radial play resulting from radial clearance between the outer circumference of the bearing assembly and the bore, the disc having a projection extending axially into the radial clearance, the improvement, intended for use with an axially spring-loaded bearing assembly, in which:

the projection comprises a wedge-shaped rim formed on the periphery of the disc which, when placed in contact with

the outer circumference of a bearing assembly and pressed into the clearance between the outer circumference of the bearing assembly and a bearing bore in which the bearing assembly is placed, bears on the outer circumference of the bearing assembly and prevents radial play between the bearing assembly and the bore.

4,486,056

SUPPORT ROLL AND METHOD FOR INSTALLING THE SAME IN A FRAME MEMBER OR THE LIKE

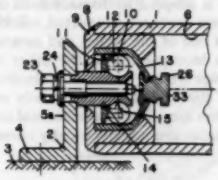
Manfred Brandenstein, Eussenheim, and Wilhelm Meyer, Reichmannshausen, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 4, 1983, Ser. No. 472,170

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1982, 3210204

Int. Cl.³ F16C *33/78*

U.S. Cl. 384—477 **7 Claims**



1. A support roll assembly adapted to be rotatably journalled between spaced frame members comprising an elongated hollow support roll, and support pins mounted in opposite axial ends of said roll, at least one of said support pins being supported in a ball bearing consisting of an outer ring having a generally cylindrical outer race and terminating in a radially inwardly facing thrust shoulder, an inner member having a groove-shaped inner race and formed integrally with the support pin and a plurality of balls arranged in the annular space between the inner and outer races and elastic means in the form of a sealing plug adapted to be mounted in the thrust shoulder of the outer ring and including an axially inwardly yielding elastic wall confronting the inner axial end face of the inner member and fastening means in the form of a fastening screw member engaging in the threaded bore section of the inner member to secure the inner member and support pin to the frame and being of a predetermined configuration so that the inner end of the fastening screw is engageable with the inside front face of said sealing plug.

4,486,057

HASP CONSTRUCTION

Charles C. Siwy, 248 Elmsford Dr., W. Seneca, N.Y. 14224

Filed Dec. 8, 1982, Ser. No. 447,781

Int. Cl.³ E05B *65/44, 65/48*

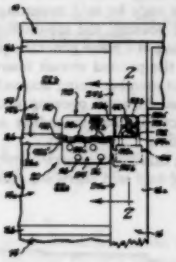
U.S. Cl. 312—216 **5 Claims**

2. In the combination of a cabinet having at least two adjacently disposed closures supported by a cabinet frame for movement between closed and open positions, and security means for releasably locking said closures to said frame for preventing movement of said closures from said closed positions thereof, the improvement comprising:

said security means includes a rigid first plate fixed to a front surface of a first of said closures;

a rigid second plate;

hinge means for joining said second plate to said first plate for swinging movement about a hinge axis between an operative position, wherein said second plate is disposed essentially coplanar with said first plate and in a position for overlying engagement with a front surface of a second of said closures, and an inoperative position, wherein said second plate is removed from said position for overlying engagement with said front surface of said second of said closures to permit selective opening movements of said closures relative to one another and said frame, said second plate has a locking portion arranged to overlie said frame adjacent said second of said closures when said second plate is in said operative position; and



means fixed to said frame and positioned for cooperation with said locking portion of said second plate for securing said closures in said closed positions thereof, when said second plate is in said operative position.

4,486,058

POWER SOURCE TERMINAL ASSEMBLY

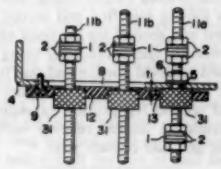
Yasumasa Takagi, Kawasaki; Tomohico Sasaki, Sagamihara; Tadanobu Matsumura, Machida, and Tadashi Gobuichi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 14, 1982, Ser. No. 418,009

Claims priority, application Japan, Sep. 18, 1981, 56-148079

Int. Cl.³ H01R *4/66*

U.S. Cl. 339—14 R **11 Claims**



1. A power source terminal assembly, to be mounted in a window of a casing of an electronic instrument, comprising

a plurality of terminal screw rods, each said terminal screw rod having a central flange, and

an insulating substrate into which said terminal screw rods are molded, with said flanges partly embedded in said substrate,

wherein at least a first one of said terminal screw rods is used as a grounding terminal and is formed so that a first side of its flange projects outwardly of the surface of said substrate by a predetermined amount for contacting said casing.

4,486,059

RECEPTACLE ASSEMBLY

David M. Deyoung, Bloomington, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.

Filed Sep. 20, 1982, Ser. No. 420,133

Int. Cl.³ H01R *4/66*

U.S. Cl. 339—14 R **8 Claims**

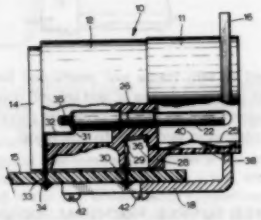
1. A receptacle assembly adapted for mounting onto a

printed circuit board or the like, said receptacle assembly comprising:

a housing having a forward opening for receiving a mating plug, a base portion for connection with the printed circuit board, a rearward recessed portion and a mounting portion disposed between said forward opening and said rearward recessed portion;

at least one elongated contact member rigidly supported between its ends by said mounting portion and disposed within said housing, the longitudinal axis of said contact member lying in a plane generally parallel to the mounting surface of the printed circuit board, the forward end of said contact member being accessible to the mating plug through said forward opening and the rearward end of said contact member extending into said rearward recessed portion;

a lug opening extending generally perpendicular to said base portion and into said rearward recessed portion; and



a contact lug connected with said elongated contact member for electrically connecting said contact member with a contact joint associated with the printed circuit board, said contact lug including a first leg portion connected with a rearward portion of said elongated contact member, a second leg portion connected with the contact joint of the printed circuit board and extending through said lug opening and generally perpendicular to the mounting surface of the printed circuit board, and an intermediate leg portion joining said first and second leg portions so that said first and second leg portions are laterally offset from one another, said contact lug being disposed within said rearward recessed portion and said lug opening being larger than the cross-sectional configuration of that portion of said second leg portion extending therethrough thereby permitting limited relative movement between said housing and said contact joint.

4,486,060

CONNECTOR ARRANGEMENTS

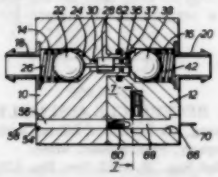
William J. P. Currall, Swindon, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Oct. 14, 1982, Ser. No. 434,421

Claims priority, application United Kingdom, Oct. 15, 1981, 81/31138; Oct. 15, 1981, 81/31139; Oct. 15, 1981, 81/31140

Int. Cl.³ H01R *4/64*

U.S. Cl. 339—15 **18 Claims**



1. A connector arrangement for connecting two fluid supply lines and two electrical leads comprising first and second abuttable bodies, each body having a fluid duct adapted to be connected to one of the fluid supply lines and an electrical conductor adapted to be connected to one of the electrical leads, each body including means for closing off the end of each fluid supply duct, the second body defining an orifice, the first body having a projecting portion adapted to project into the orifice formed in the second body to connect the two fluid ducts, one of the bodies having a projecting electrically conductive portion extending from its electrical conductor and the projecting electrically conductive portion adapted to project into an orifice formed in the other body to connect the two electrical conductors, the electrical conductors being connected before the fluid ducts connect, the means for closing off the end of each fluid duct comprises a one-way valve located in the end of each duct to prevent fluid from flowing out of each duct and valve actuating means located in at least one of the ducts, the valve actuating means causing both of the one-way valves to open when the ducts are connected to permit fluid to flow from one duct to the other duct, a single movable member is located inside the end of one of the ducts, the single movable member is adapted to displace both of the one-way valves when the two ducts are connected, switch means incorporated in at least one of the bodies and means for operating the switch means incorporated in the other body whereby when the two bodies are not joined, two electrical conductors in at least one of the bodies are electrically connected, and when the two bodies are joined, the electrical conductors in at least one of the bodies are not electrically connected.

4,486,061

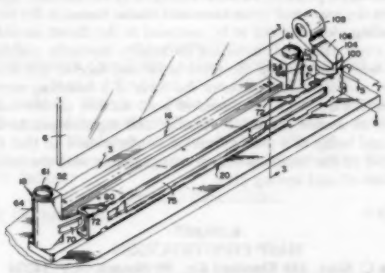
ZERO INSERTION FORCE CONNECTOR HAVING IMPROVED SUBSTRATE CLAMP

Dimitry G. Grabbe, 301 Main St., Lisborn, Me. 04252, and Iosif Korsunsky, 3600 Brookridge Ter., #203, Harrisburg, Pa. 17109

Filed Jan. 7, 1982, Ser. No. 337,569

Int. Cl.³ H01R *23/70*

U.S. Cl. 339—75 MP **10 Claims**



1. A zero insertion force electrical connector of the type comprising a terminal housing having a plurality of terminals in the housing, the terminals having contact portions which normally extend beyond a first surface of the terminal housing, and a clamp for clamping a substrate or the like against the first surface of the housing so that terminal pads on the substrate electrically contact the contact portions of the terminals, the connector being characterized in that:

the clamp comprises a clamping bar which extends parallel to, and is spaced from, the one surface of the terminal housing, the clamping bar being movable parallel to its axis between first and second positions,

a guide is provided which is effective between the clamping bar and the terminal housing and which moves the clamping bar laterally of its axis towards the first surface of the terminal housing when the clamping bar is moved from the second position to the first position and which moves the clamping bar away from the first surface of the terminal housing when the clamping bar is moved from the first

position to the second position, the guide being resiliently deformable to permit variation of the position of the clamping bar when the clamping bar is in the first position with a substrate clamped against the first surface of the terminal housing whereby the connector can be used with substrates of varying thickness whereby,

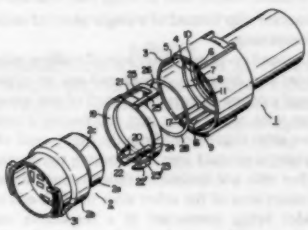
upon placement of edge portions of the substrate between the clamping bar and the first surface of the terminal housing when the clamping bar is in the second position and then moving the clamping bar to the first position, the substrate will be clamped against the first surface of the housing and the terminal pads on the substrate will be pressed against the contact portions of the terminals.

4,486,062

WATERPROOF CONNECTOR

Masakuni Kasugai, Suzuka, Japan, assignor to Tokai Electric Wire Company, Ltd., Japan

Filed Sep. 28, 1982, Ser. No. 425,174
Claims priority, application Japan, Nov. 30, 1981, 56-177993
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—91 R **3 Claims**



1. A waterproof connector comprising:

a male connector housing;

a female connector housing having a hollow cylindrical opening for receiving said male connector housing, said hollow cylindrical opening having a first inner peripheral surface portion of a small diameter at the base of said cylindrical opening, a second inner peripheral surface portion of a diameter larger than said small diameter and connected to said first inner peripheral surface portion through a first annular step, and a third inner peripheral portion of a diameter larger than that of said second inner peripheral surface portion formed between the open end of said hollow cylindrical opening and said second inner peripheral surface portion and connected to the latter through a second annular step;

a seal ring mounted in said female connector housing with its outer peripheral surface in engagement with said second inner peripheral surface portion;

a retainer ring inserted into said third inner peripheral surface portion to latch and hold said seal ring;

said male connector housing having a small-diameter portion fitting into said first inner peripheral surface portion of said cylindrical opening of said female connector housing and a large-diameter portion positioned within said third inner peripheral surface portion when said male connector housing is received by said female connector housing;

said retainer ring having an opening therein formed to pass said male connector housing small-diameter portion and said seal ring being engaged with said male connector housing small-diameter portion for forming a seal therewith;

a first locking means on said retainer ring and said female connector housing for fixing said retainer ring to said female connector housing; and

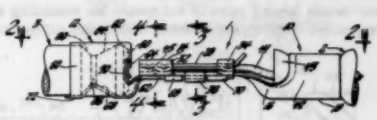
a second locking means on said male connector housing and said female connector housing for fixing said male connector housing to said female connector housing when said male connector housing is received by said hollow cylindrical portion.

4,486,063

CORE CRIMP IGNITION TERMINAL

Raymond C. Seifert, Warren, and Frank J. Miller, Jr., Bristolville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 2, 1982, Ser. No. 394,629
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—97 C **3 Claims**



1. A two-piece electrical connector means for detachably connecting an ignition cable or the like having a plurality of high tensile strength, nonconductive strands coated with an electrically conductive material to a mating stud terminal,

said connector means including a first terminal member of crimpable material having a longitudinally extending support portion and a pair of arms extending transversely of said support portion and a second terminal member having a socket portion which is adapted to snap fittingly engage the stud terminal and a longitudinally extending tongue portion which is clamped to said support portion of said first terminal member by bending said pair of transversely extending arms of the support portion over and into engagement with said tongue portion of said second terminal member on its side opposite its side of engagement with the support portion, the improvement comprising:

said support portion of said first terminal member having crimping means for directly electrically and mechanically connecting the first terminal member to an exposed end of the coated nonconductive strands of said cable,

said crimping means comprising a first crimp wing integral with one side of said longitudinally extending support portion and being foldable to lightly clamp the exposed strands of said cable against the support portion to maintain the integrity of the electrically conductive coating on the strands and make an electrical connection therewith,

a second crimp ring integral with said support portion and remote from said socket portion of said second terminal and foldable over said first crimp wing to lightly clamp the exposed strands of the cable against the support portion to maintain the integrity of the conductive coating on the strands and make an electrical connection therewith, and

a third crimp wing integral with said support portion and spaced from the second crimp wing, said third crimp wing being located adjacent said socket portion of said second terminal and being foldable over said first crimp wing for tightly clamp the cable to make a strong mechanical connection with the coated nonconductive strands thereof.

4,486,064

POWER INTERFACE CONNECTOR

William B. Long, Camp Hill; Suel G. Shannon, Harrisburg; John R. Shuey, Carlisle, and Daniel E. Stahl, Hummelstown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 8, 1982, Ser. No. 447,910
Int. Cl.³ H01R *13/39*
U.S. Cl. 339—99 R **20 Claims**

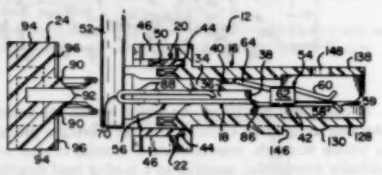
10. An electrical connector for connecting insulated conductors to electrical terminals, comprising:

dielectric housing means having terminal-receiving passage-

ways and conductor-receiving areas extending normal to each other;

electrical terminal means secured in said terminal-receiving passageways, said terminal means having contact means extending along a front section of said housing means and conductor-terminating means disposed in a back section of said housing means, said conductor-terminating means having closely spaced overlapping member means along which coincident terminating slot means extend, said terminating slot means being in alignment with said conductor-receiving areas and having inclined surfaces at entrances thereto and parallel surfaces ending in radiussed surfaces;

cover means having pairs of leg means for extending along respective overlapping member means and surface means



for engaging the conductors when disposed against said inclined surfaces, said surface means adapted to force the conductors along the inclined surfaces to cut through the insulation of the conductors and along the parallel surfaces to score and terminate the conductive cores adjacent the radiussed surfaces when said cover means is pushed into position on said housing means;

latching means on said housing means and said cover means for latching said cover means and said housing means together; and

securing means on said conductor-terminating means for engaging said leg means and securing said cover means on said housing means so that said surface means maintains the conductive cores in a terminated position in said terminating slot means.

4,486,065

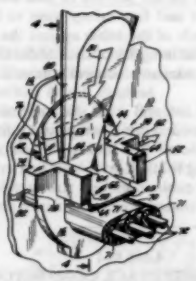
STRAIN-RELIEF ELECTRICAL CABLE CONNECTOR

James M. Wittes, 40 Palisade Rd., Linden, N.J. 07076

Continuation-in-part of Ser. No. 257,979, Apr. 27, 1981, abandoned. This application Jul. 5, 1983, Ser. No. 510,919

Int. Cl.³ H01R *13/58*

U.S. Cl. 339—103 B **29 Claims**



1. A strain-relief connector for an electrical conductor, said connector comprising a first body member shaped to fit into and engage with the edge of a hole in a wall and with said conductor, a second body member shaped at one side to engage said conductor and at a second side opposite said one side, to engage said edge of said hole, said second body member being shaped to be wedged into a location substantially in the plane of said edge of said hole between said conductor and said edge of said hole, with said first body member mounted in said hole in strain-relieving engagement with said wall, in order to hold said connector and said conductor in place.

4,486,066

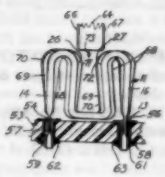
CONNECTOR AND CLIP THEREFOR

Jerry B. Minter, Components Corporation, Denville, N.J. 07834

Filed Apr. 12, 1982, Ser. No. 367,159

Int. Cl.³ H01R *9/09*

U.S. Cl. 339—176 MP **15 Claims**



1. A connector clip formed of a single piece of resilient wire, said clip comprising:

first and second co-planar outer legs of resilient wire, each of the outer legs having a curved end and an opposite end;

a U-shaped portion integrally formed of the same piece of resilient wire as the outer legs and having a central bight and two sides that extend from the bight, each of the sides comprising a contact area confronting the contact area of the other side and spaced a predetermined distance from the contact area of the other side, the free end of each of the sides being connected to a respective one of the curved ends of the outer legs, whereby the free ends of the sides of the U-shaped portion merge directly into the curved ends to form a generally M-shaped clip; and

first and second flexure portions integrally formed of the wire intermediate the curved end and the opposite end of the first and second outer legs respectively, the cross-sectional dimension of each of the flexure portions being increased in a direction at an angle to the common plane of the co-planar outer legs and reduced perpendicular to that direction to allow the flexure portions to bend more easily in said common plane than adjacent portions of the outer legs can.

4,486,067

FUSE HOLDER, ESPECIALLY FUSE HOLDER FOR MINIATURIZED FUSES

Peter Wallner, Kriens, and Alois Lindenmann, Lucerne, both of Switzerland, assignors to Schurter AG, Lucerne, Switzerland

Filed Nov. 8, 1982, Ser. No. 439,882

Claims priority, application Switzerland, Nov. 25, 1981, 7532/81

Int. Cl.³ H01R *3/00, 4/54*

U.S. Cl. 339—218 R **17 Claims**

16. A fuse holder for the insertion of a fuse having two ends, said fuse holder comprising:

a substantially tube-like socket member made of electrically insulating, thermoplastic synthetic material;

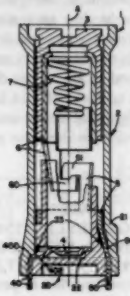
two contact members disposed within said socket member, each of said two contact members being arranged to form an electric contact with a respective one of said two ends of said fuse when inserted into said fuse holder;

said two contact members each being in electrical connection inside said socket member to a respective terminal;

a head member made of electrically insulating material designed to accommodate said fuse;

said socket member comprises two parts welded ultrasoni-

cally to each other with the formation of a solder-tight welding joint embedding the terminals; and



said terminals projecting outside said socket member and extending through said solder-tight welding joint formed between said two parts of said socket member.

4,486,068

PIN MEMBER FOR AN ELECTRICAL CONNECTOR AND A METHOD FOR MAKING SAME

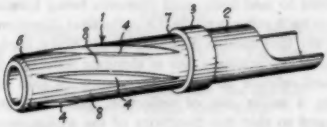
Giovanni Ghigliotti, Genova-Pegli, and Attilio Lancella, Genova-Sestri, both of Italy, assignors to Connei S.p.A., Italy

Filed Oct. 22, 1982, Ser. No. 435,986

Claims priority, application Italy, Oct. 28, 1981, 12660 A/81

Int. Cl.³ H01R *13/06*

U.S. Cl. 339—252 P **11 Claims**



1. A pin member for pin-and-socket electrical connectors, comprising a hollow cylindrical body of electrically conductive material provided with through slots arranged on a cylindrical surface thereof, said slots respectively having a longitudinal axis inclined with respect to the longitudinal axis of said cylindrical body, each slot longitudinal axis lying in a plane, wherein said body is twisted and permanently deformed, so that strip portions of the body established between adjacent slots bulge outward from the cylindrical surface of the hollow cylindrical body to progressively increase the outer diameter of said hollow cylindrical body proximate the bulging strip portions.

4,486,069

AFOCAL TELESCOPES

Iain A. Neil; Michael O. Lidwell, and William McCreath, all of Glasgow, Scotland, assignors to Barr & Stroud Limited, Glasgow, Scotland

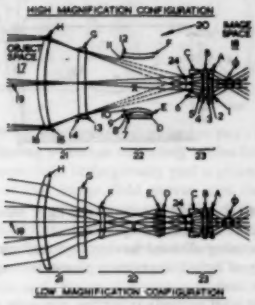
Filed Jun. 23, 1982, Ser. No. 391,586

Claims priority, application United Kingdom, Jul. 1, 1981, 8120274

Int. Cl.³ G02B *15/14*

U.S. Cl. 350—1.2 **13 Claims**

1. An afocal telescope comprising an objective system and an eyepiece system having a common optical axis, the objective system being arranged to accept radiation in the infrared waveband from a distant scene and to form a real image thereof within the telescope the eyepiece system being arranged to receive radiation from said image and to provide at a real pupil a magnified view of the scene, wherein said objective system has an f-number of the order of 2.5 or less and said eyepiece system is formed by a triplet of three powered lens elements each being made of a material having a refractive index of the order of 2.4 or greater and a dispersive V-value of the order of 140 or greater, two of said eyepiece lens elements being of high positive power, the eyepiece lens element adjacent the objective system being of very low power due to its thickness and having a concave refractive surface towards the objective system and a convex refractive surface remote from the objective system, said convex surface being separated from the adjoining refractive surface of the central lens element of the triplet by an air space which in the axial direction is substantially zero on said axis and which progressively increases in magnitude as the distance off axis increases.



4,486,070

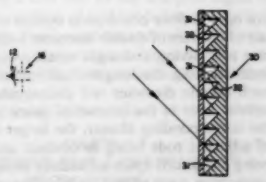
MIRROR-ABSORBER FOR USE IN THE ILLUMINATION OF TRANSMISSION HOLOGRAMS

Stephen A. Benton, Lincoln, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 253,671, Apr. 13, 1981, Pat. No. 4,429,947. This application Oct. 7, 1983, Ser. No. 539,932

Int. Cl.³ G02B *27/02, 17/00*; G03H *1/22*

U.S. Cl. 350—3.85 **3 Claims**



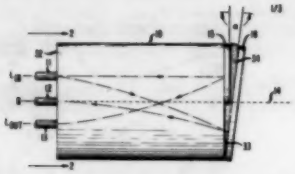
1. A mirror-absorber especially adapted for use in the illumination of transmission holograms and comprising a generally rectangular block of light absorbing material having first and second spaced apart faces, with major dimensions substantially equal to or greater than the major dimensions of a transmission hologram to be illuminated, said first face being formed with a parallel array of stepped segments of generally triangular cross-section, each segment being formed on one face with a mirror surface.

4,486,071

OPTICAL COUPLING DEVICE

Frank H. Levinson, Bethlehem, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 7, 1982, Ser. No. 396,118
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.18 **17 Claims**



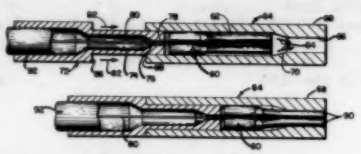
1. An optical device for diverting light from one transmission element to another comprising:
a light focusing element having two end surfaces;
a plurality of light transmission elements coupled to one end surface; and
a pair of at least partially reflecting elements in close proximity to the opposite end surface and disposed so that their optical axes are at an angle to each other, at least one of said reflecting elements having an area which covers a continuous portion of the area of the said opposite end surface contiguous with an edge of said surface and which is a selected fraction of the area of the end surface so that light from at least one light transmission element can pass through said opposite end surface without being incident on the said reflecting element.

4,486,072

OPTICAL CONNECTOR AND SPLICING DEVICE USING DOUBLE DIAMETER RESILIENT RODS

Harold A. Roberts, North Attleboro, Mass., assignor to Augat Inc., Mansfield, Mass.

Filed Jan. 12, 1982, Ser. No. 338,909
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.21 **11 Claims**



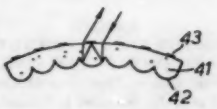
1. An optical fiber connection system comprising:
a pair of clusters of double diameter rods, each double diameter rod having a straight smaller diameter nose portion located along the longitudinal centerline of the rod and each double diameter rod cluster adapted to receive an optical fiber in the interstitial space between the rods of the corresponding cluster, the larger diameter distal ends of adjacent rods being in contact and the nose portions being in spaced-apart adjacency along mutually parallel centerlines, each of said rods having only one end with an enlarged diameter portion;
a rigid ferrule for each of said clusters having a predetermined outer surface configuration and an inner channel configured to receive both the nose portions of the rods and the larger diameter portions of the rods, each of said clusters having the nose portions of corresponding rods in a cluster forced into a corresponding rigid ferrule, said ferrule forcing the nose portions of said rods together such that adjacent nose portions are in contact, the interstitial space between the distal ends of said rods being slightly larger than a predetermined maximum diameter optical fiber and the interstitial space between the nose portions of said rods being slightly smaller than a predetermined minimum diameter optical fiber; and
an alignment sleeve having an inner channel adapted to receive opposed ferrules inserted from either end thereof such that the ends of the fibers carried in said nose portions are maintained in alignment due to the cooperation of the rigid outer surfaces of said ferrules with the inner channel of said alignment sleeve and due to the squeezing action of the ferrules on the nose portions of the double diameter rods.

4,486,073

RADIANT ENERGY REFLECTING STRUCTURES

Michael D. Boyd, 4 Dirrawan Gardens, Reid, A.C.T., Australia

Continuation-in-part of Ser. No. 917,370, Jun. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 746,844, Dec. 2, 1976, abandoned. This application Sep. 15, 1980, Ser. No. 186,859
Int. Cl.³ E06B *9/26*; G02B *5/12, 5/126*
U.S. Cl. 350—103 **10 Claims**



1. A radiant energy reflecting member comprising:
an elongate body; and
a plurality of elongate retro-reflecting elements formed in or attached to said body, said elements being located adjacent to each other with their longitudinal directions parallel to the longitudinal direction of said body, each of said elements comprising a pair of elongate reflecting surfaces inclined relative to each other, each of said elements having a major axis of reflection, said elements being arranged so that the directions of the major axes of the elements vary progressively with the transverse position of the elements on said body;
the surface of the body being formed into a corrugated surface so as to form said retro-reflecting elements with the distance between the peaks of adjacent corrugations varying progressively transverse the body;
the peaks of said corrugations laying in a first surface and the troughs of the corrugations laying in a second surface which is parallel to said first surface.

4,486,074

INTERCHANGEABLE LENS PERMITTING AN AUTOMATIC FOCUS-ADJUSTING DEVICE TO BE REMOVABLY MOUNTED THERETO

Yasuhisa Sato, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

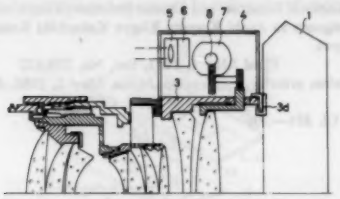
Continuation of Ser. No. 311,444, Oct. 14, 1981, abandoned. This application Dec. 29, 1983, Ser. No. 565,846
Claims priority, application Japan, Oct. 28, 1980, 55/151140
Int. Cl.³ G02B *7/08*; G03B *3/10*
U.S. Cl. 350—255 **1 Claim**

1. An interchangeable lens capable of automatic focus-adjustment comprising:
a first lens barrel incorporating an imaging lens and having, at at least one end thereof, means for mounting said first lens barrel to a camera body; and
a second lens barrel removably mounted to said said lens barrel, said second lens barrel including:
(a) first and second connecting means provided at the opposite ends of said second lens barrel, respectively,

for mounting said second lens barrel between said first lens barrel and the camera body;

(b) a plurality of lenses constituting an afocal optical system, said lenses having a front lens group and a rear lens group with said rear lens group movably held within said second lens barrel;

(c) an automatic focus-adjusting device, including an



element for receiving light from an object to be photographed, a circuit for calculating the distance from the camera body to the object to be photographed on the basis of a signal from said element, and driving means actuatable in response to a signal from said circuit; and

(d) means for transmitting a driving force from said driving means to said afocal optical system to move said rear lens group.

4,486,075

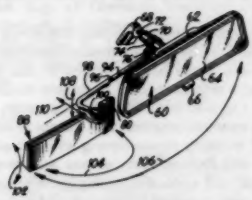
MIRROR ASSEMBLY FOR A VEHICLE

Stephen R. Cohen, 1127 Bay Park Pl., Far Rockaway, N.Y. 11691

Filed Sep. 27, 1982, Ser. No. 424,575

Int. Cl.³ G02B *5/08, 5/10*

U.S. Cl. 350—603 **25 Claims**



1. An auxiliary mirror assembly for a vehicle having a standard rearward viewing mirror, said auxiliary mirror assembly comprising:

a mirror unit having a convex mirror on one side thereof and a flat mirror on the opposing side thereof;

support means for holding said mirror unit;

coupling means for retaining said support means with respect to the vehicle, such that one of said sides of the mirror unit can be directed to face rearward of the vehicle, and

manipulation means coupled to said support means for providing selective inversion of the mirror, whereby the desired one of said convex and flat mirrors can be selected as the rearward facing mirror, said manipulation means comprising means for positioning either one of the selected sides in a laterally adjacent, substantially coplanar and colinear position which is substantially contiguous with said standard rearward viewing mirror.

4,486,076

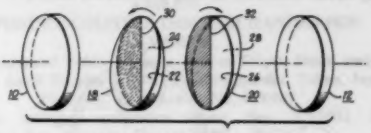
REAL TIME STEREO IMAGING

Jon C. Taenzer, Palo Alto, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Oct. 29, 1981, Ser. No. 316,332

Int. Cl.³ A61B *10/00*; G02B *27/22*; G05D *25/00*

U.S. Cl. 350—132 **6 Claims**



1. In a system for producing stereo image pairs in real time, said system including an image deflecting means for repeatedly sweeping an image field orthogonally past a given line so that every portion of that image field moves past that line, and blocking means for preventing opposite sides of the said image from reaching said line on alternate sweeps of said image field past the said line, thereby to present a different image view on alternate sweeps and thus present a different one of a stereo image pair at the said line on alternate sweeps.

4,486,077

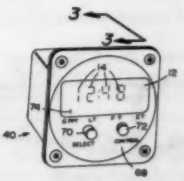
DIGITAL METER WITH UNIFORM ILLUMINATION AND LESS INADVERTENT SETTING

David N. Torresdal, Redwood City, Calif., assignor to Davtron, Inc., Redwood City, Calif.

Filed Feb. 22, 1982, Ser. No. 350,764

Int. Cl.³ F21L *7/04*; G02B *1/13*; G04B *9/00*

U.S. Cl. 350—331 R **7 Claims**



4. A multiple function meter comprising a multiple digit display having multiple digits, a first manually actuated means connected to said display for selecting one of the multiple functions, a second manually actuated means connected to said display for changing a displayed value of a selected function, simultaneous actuation of said first and second manually actuated means selecting a first one of the multiple digits of said display for setting, actuation of said second manually actuated means then setting the first one of the multiple digits, actuation of said first manually actuated means then selecting a second one of the multiple digits for setting by actuation of said second manually actuated means.

4,486,078

DRIVING DEVICE FOR A REVOLVER IN A MICROSCOPE

Noriyoshi Hashimoto, Yokohama, and Kazuaki Saiki, Kawasaki, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Filed Apr. 12, 1983, Ser. No. 484,415

Claims priority, application Japan, Apr. 16, 1982, 57-55439[U]

Int. Cl.³ G02B *7/16*; H02P *3/08*

U.S. Cl. 350—520 **8 Claims**

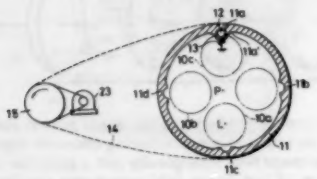
1. A microscope provided with a revolver having objective lenses mounted thereon and rotatable to move the objective

lenses into an observation optical path, said microscope comprising:

(a) means for varying the load torque for rotation of said revolver at the rotated position of said revolver when said objective lenses face a predetermined position in said observation optical path;

(b) an electric motor;

(c) circuit means for driving said electric motor;



(d) means for transmitting the rotation of said electric motor to said revolver;

(e) means for detecting the fluctuation of the load of said electric motor caused by a variation in the rotational torque of said revolver; and

(f) means for acting on said circuit means to stop the rotation of said electric motor in response to said detecting means.

4,486,079

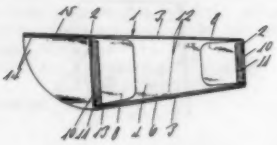
COLLAPSIBLE TELESCOPE

Kosaku Ueda, 8 Hachioji 1-chome, Ikeda-city, Osaka 563, Japan

Continuation of Ser. No. 328,266, Dec. 7, 1981, Pat. No. 4,443,071. This application Apr. 16, 1984, Ser. No. 600,883

Int. Cl.³ G02B *7/02, 23/18*

U.S. Cl. 350—546 **4 Claims**



1. A collapsible telescope comprising:

a main body of quadrangular cross section defined by two long side walls and two short side walls and having folding lines at angled portions so that said main body is foldable into a substantially flat condition;

means for maintaining said main body in a substantially rigid erect condition;

lenses fixedly secured around apertures formed in said two short side walls, said lenses including one or more eye lenses mounted on one of said short side walls and one or more objective lenses mounted on the remaining short side wall; and

a hood provided to extend from one edge of one of said two long side walls contiguous with said short side wall bearing the objective lenses, said hood being disposed in the direction of an extension of said one long side wall to screen outside light radiation when said body is in the substantially rigid erect condition and being folded to cover and protect the objective lenses when said body is folded into the substantially flat condition; and

a margin member extending from said short side wall bearing the objective lenses and foldable in a direction in parallel with said hood, said hood and said margin member being in parallel with each other and being adhered or otherwise secured fixedly one on the other outside of the cross section of said main body for assembling said main body into said quadrangular cross section.

4,486,080

DEVICE FOR DETECTING BLINKING OF AN EYE UNDER EXAMINATION

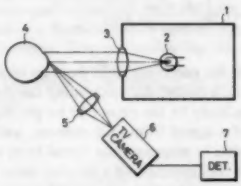
Kiyoshi Itoh; Yukiyasu Nishikawa; Shuji Hoshika, all of Saitama; Masato Hara; Hideyuki Ishiai, both of Tokyo; Ikuzo Okamoto, Saitama, and Osamu Shindow, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 1, 1981, Ser. No. 259,622

Claims priority, application Japan, May 2, 1980, 55-59207

Int. Cl.³ A61B *3/14;* G03B *29/00*

U.S. Cl. 351—206 **1 Claim**



1. An opthalmological instrument in which optical energy is applied through a first optical system to an eye under examination and light beams reflected from the eye and analyzed to determine conditions of the eye including a blinking detecting device comprising:

a second optical system for receiving light beams reflected from a front portion of an eye under examination to form an image of said front portion of the eye;

image detection means disposed at an image forming plane of said second optical system; and

detecting circuit means connected to said image detection means for determining whether a video signal produced by said image detection means falls below a predetermined threshold value and producing a digital signal indicative that blinking of the eye under examination has occurred,

wherein said image detection means comprises a television camera, said detecting circuit means comprises a comparator, said video signal being coupled to one input of said comparator; a reference level generator having an output coupled to a second input of said comparator; a first memory having an input coupled to an output of said comparator; second memory means having an input coupled to an output of said first memory means and producing said digital signal; and vertical blanking pulse generator means having an input coupled to receive said video signal and detect a vertical blanking component thereof and an output coupled to clock inputs of said first and second memory means as a function of said vertical blanking component of said video signal.

4,486,081

OPTICAL IMAGE PROJECTOR

Albert G. Coulter, Edinburgh, Scotland, assignor to Ferranti plc, Cheshire, England

Filed Nov. 24, 1981, Ser. No. 324,478

Claims priority, application United Kingdom, Nov. 29, 1980, 8038411

Int. Cl.³ G03B *21/00*

U.S. Cl. 353—27 R **21 Claims**

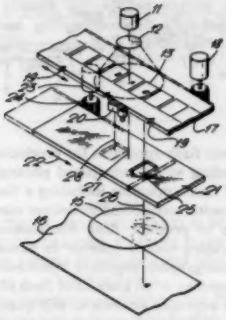
1. An optical image projector for projecting an image on an imaging medium, said projector comprising:

a transparency carrier positionable at one or more accurately defined fixed positions and supporting at each of a

plurality of fixed locations thereon a plurality of separate image transparencies arranged in a regular array associated with a defined position,

a light source operable to produce a beam of such area as to illuminate, at each carrier fixed position, an area occupied by all of the image transparencies of the array associated therewith and to produce a corresponding array of image projection beam paths,

masking means translatable relative to the carrier at each of said fixed positions and apertured to define at a plurality of



translational positions a projection path for one only at a time of all the image projection beam paths of the associated array, and

first drive means responsive to the selection of a desired image transparency for positioning the imaging medium in alignment with the image projection beam path of the desired image transparency and second drive means for positioning the masking means with respect to the carrier to align the aperture with the image projection path of that transparency.

4,486,082

APPARATUS FOR TREATING MATERIALS ISSUING FROM PHOTOCOMPOSING MACHINES

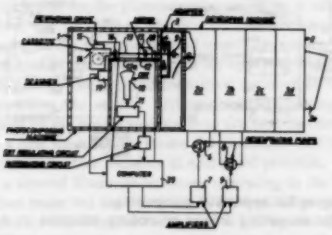
Gerald Wagner, Ebenhausen, and Dieter Wauer, Taufkirchen, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 20, 1983, Ser. No. 496,449

Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220169

Int. Cl.³ G03D *3/06*

U.S. Cl. 354—6 **13 Claims**



1. Apparatus for processing a web of photosensitive material, comprising a photocomposing machine having means for exposing photosensitive material; a developing machine arranged to develop the exposed material and including at least one bath containing a supply of fluid which contacts the exposed photosensitive material and whose characteristics change as a result of such contact with the exposed photosensitive material; adjustable regenerating means for the fluid of said bath; and means for adjusting said regenerating means as a function of the characteristics of undeveloped photosensitive material and as a function of the operation of the photocomposing machine.

4,486,083

EXPOSURE COUNTER DISC MECHANISM FOR CAMERAS

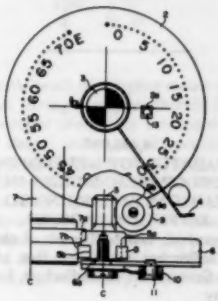
Jun Takada, and Yukio Takaoka, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,197

Claims priority, application Japan, Sep. 7, 1981, 56-132871[U]; Sep. 16, 1981, 56-137276[U]

Int. Cl.³ G03B *17/36*

U.S. Cl. 354—203 **9 Claims**



1. An exposure counter disc mechanism for a camera, comprising:

a sprocket comprising an axial portion having circumferential film feed teeth for feeding film and a circular portion;

a roller pressed against the circular portion of said sprocket;

a gear having gear teeth held in mesh with said film feed teeth of said sprocket and rotatable in synchronism with said roller for correcting rotation transmission error due to slippage of said roller with said circular portion; and

means for transmitting rotation of said gear and said roller to a graduated dis, said disc being said counter disc.

4,486,084

LIGHT SHIELD BLADES FOR LIGHT CONTROL DEVICE AND LIGHT CONTROL DEVICE UTILIZING SAID LIGHT SHIELD BLADES

Akihiko Sato, Kawasaki; Yoshiyuki Nakano, and Etsuo Tanaka, both of Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 422,951

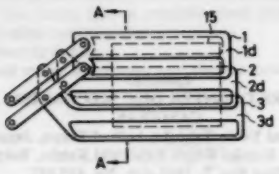
Claims priority, application Japan, Dec. 7, 1981, 56-196654; Feb. 1, 1982, 57-13339

Int. Cl.³ G03B *9/40*

U.S. Cl. 354—246 **18 Claims**

1. In a shutter apparatus having a plurality of successively overlapping light shielding blades adapted to be disposed across a light path of an optical apparatus, each blade having a pair of opposite faces, and means for driving said blades between a closing position in which said blades are extended to close said light path and an opening position in which said blades are retracted to open said light path, the improvement wherein at least two successive blades have adjacent faces with overlapping areas thereof in the closing position of the blades that are substantially planar and non-recessed, and wherein at

least one of said two successive blades is recessed over an area of its adjacent face away from said overlapping areas and is



also recessed over an area of its remaining face substantially opposite to said overlapping areas.

4,486,085

APPARATUS FOR DEVELOPING COLOR-PHOTOGRAPHIC IMAGES IN ETCHING ALKALINE SOLUTIONS ACCORDING TO THE COLOR DIFFUSION PROCESS

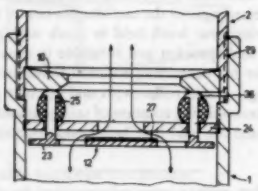
Immo Boie, Langenfeld; Guido Kovacic, Unkel, and Victor Osegowitsch, Taufkirchen, all of Fed. Rep. of Germany, assignors to Afga-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 31, 1983, Ser. No. 462,664

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 8203539[U]

Int. Cl.³ G03D *13/06*

U.S. Cl. 354—312 **7 Claims**



1. In an apparatus for developing color photographic images in an image-wise exposed mono-sheet material in a color diffusion process by contact in an aqueous-alkaline solution,

a first container capable of containing an aqueous-alkaline solution

a second container capable of receiving an image-wise exposed and developable mono-sheet material, and having a holding means preventing a mono-sheet from falling out,

means for making said containers sealable together while developing color photographic image in the apparatus by the overturning method,

a contact safeguard means in said first container and having a valve mounted in said first container which prevents access to the etching solution through said safeguard means,

said first container and said second container being so interrelated that sealing of the first and second containers opens said valve in said first container

and said valve being so constructed and arranged so as to prevent access into the alkaline solution and the outflow of the alkaline solution prior to said sealing.

4,486,086

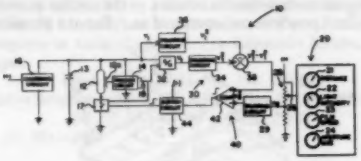
ELECTRONIC FLASH APPARATUS

John M. Kresock, Elba, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 23, 1983, Ser. No. 554,670

Int. Cl.³ G03B *15/03, 15/05*

U.S. Cl. 354—413 **4 Claims**



1. In electronic flash apparatus for producing flash illumination corresponding to an anticipated photographic exposure operation, said flash apparatus including a flash tube, an energy-storage capacitor connected to deliver electrical energy to said flash tube to produce flash illumination, photographic condition indicating means settable in accordance with the anticipated photographic exposure operation and having an output corresponding to an amount of flash illumination that is desired for the exposure operation, and quenching means for terminating the delivery of energy to said flash tube, said flash apparatus further including:

(a) energy-monitoring means for monitoring energy as said capacitor delivers it to said flash tube; and

(b) threshold establishing means, operably associated with said energy-monitoring means and adjustable in response to said indicating means output, for causing activation of said quenching means to terminate the delivery of energy to said flash tube when the amount of energy delivered to said flash tube corresponds to the flash illumination to which said indicating means output corresponds.

4,486,087

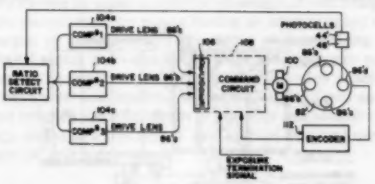
METHOD OF AND APPARATUS FOR ALTERING SENSITIVITY OF PHOTOMETER TO DIFFERENT SCENE PORTIONS

Peter P. Carcia, Reading, and Richard J. Coppa, Westwood, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 4, 1983, Ser. No. 481,587

Int. Cl.³ G03B *7/08*

U.S. Cl. 354—434 **7 Claims**



1. Photographic apparatus comprising:

means for mounting image recording material at a focal plane;

means for directing radiation from a photographic scene along a given path to the focal plane to produce an exposure of recording material located thereat;

means for evaluating radiation in the scene, said evaluating means including a photoresponsive arrangement having a given angular directional response and a plurality of lenses respectively mounted for movement between a first position in optically operative alignment with said photosensitive arrangement for altering the given angular directional

response thereof, and a second position out of said operative alignment;

means responsive to said evaluating means for controlling the amount of radiation directed from the scene to the focal plane so as to provide a selected exposure of said recording material and, including means for evaluating and comparing radiation in different areas of the scene, and means responsive to such comparison for automatically moving a selected one of said lenses to said first position to thereby provide an angular directional response of said photoresponsive arrangement in accordance with said comparative evaluation.

4,486,088

METHOD AND APPARATUS FOR ELECTROPHOTOGRAPHY CAPABLE OF CHANGING OVER IMAGES FROM POSITIVE TO NEGATIVE AND VICE VERSA

Takashi Kitamura, Yokohama, and Michio Ito, Hachioji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 104,704, Dec. 17, 1979, abandoned.
This application May 28, 1982, Ser. No. 383,098
Claims priority, application Japan, Dec. 26, 1978, 53-161400; Dec. 26, 1978, 53-161402; Dec. 26, 1978, 53-161404; Dec. 26, 1978, 53-161406
Int. Cl.³ G03G *13/02*
U.S. Cl. 355—3 CH **6 Claims**

1. An electrophotographic apparatus capable of selectively operating in a first or second operation mode to provide a high-low order between the potentials of the light area and dark area of a latent image formed in the first operation mode, which order is a reversal of the corresponding order between the potentials of the light area and dark area of a latent image formed in the second operation mode, said apparatus comprising:

(a) a photosensitive member having a photoconductive layer and an insulating layer formed on the photoconductive layer and moving through a first, a second and a third position in this order, said photoconductive layer having a property of substantially rejecting, in the dark area, the injection thereinto of charges of the polarity opposite to a first corona discharge;

(b) first corona discharger for applying said first corona discharge on the photosensitive member at said first position, the polarity of the first corona discharge being the same in the first and second operation modes;

(c) a second corona discharger for applying a second corona discharge on the photosensitive member at said second position, the second corona discharge having a component of the polarity opposite to the first corona discharge;

(d) a first illumination means for uniformly illuminating the photosensitive member at said third position;

(e) a second illumination means operating in the first operation mode but not operating in the second operation mode, the second illumination means, when operated, uniformly illuminating the photosensitive member at the first position or between the first and second positions; and

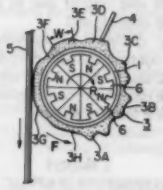
(f) image light exposure means, the position of the image light exposure to the photosensitive member being capable of switching over between the first and second operation modes, the image light exposure means exposing the image light to the photosensitive member in the first operation mode at said second position and in the second operation mode at said first position or between said first and second positions.

4,486,089

MAGNETIC BRUSH DEVELOPING MEANS

Masahiko Itaya; Satoshi Haneda, and Yukio Okamoto, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1982, Ser. No. 401,859
Claims priority, application Japan, Aug. 10, 1981, 56-124110
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 DD **4 Claims**



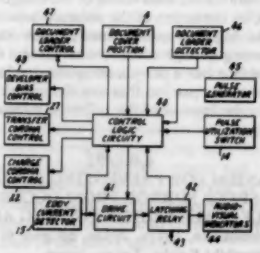
1. In a magnetic brush developing means comprising a non-magnetic sleeve having a magnet therein for absorbing and carrying a developer comprising a magnetic material on the surface of said sleeve, and said developer developing an electrostatic latent image formed on a charge receptor, the improvement wherein said non-magnetic sleeve moves in the direction of the movement of said developer, and said magnet comprises a plurality of magnet pieces arranged circumferentially within said sleeve with alternating polarity, each magnet piece having a structure which provides a magnetic field strength distribution with a plurality of circumferentially spaced peaks.

4,486,090

COPY MACHINE WITH UNAUTHORIZED COPY PREVENTION

Nicholas Warhol, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 21, 1983, Ser. No. 477,061
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **8 Claims**



1. A copy machine of the type having a document cover than can be positioned over a document presented to a platen in the copy machine for copying and having control logic circuitry for controlling the copying process of the copy machine which uses a charge corona control for operation of a charge corona to supply a uniform charge to a photoconductor and a transfer corona control for operation of a transfer corona including:

an eddy current proximity detector having an output connected to the control logic circuitry and positioned so relative movement is provided between said eddy current proximity detector and a document to be copied when the copy machine is operated, said detector adapted for pro-

viding a signal at said output whenever metal is presented to the detector via a document presented for copying;

latching means operatively connected to said output of said detector and to the control logic circuitry, said latching means providing a latch condition when the control logic circuitry provides an enable signal to said latching means at the time said output is provided, the control logic circuitry providing an enable signal to said latching means when relative movement is provided between said eddy current proximity detector and a document to be copied such that said eddy current proximity detector will provide a signal to said output due to metal present at the document to be copied; and

the control logic circuitry operatively connected to the charge corona control, transfer corona control and to said latching means, said control logic circuitry inhibiting the operation of the charge corona control when said latching means provides a latch condition.

4,486,091

ELECTROPHOTOGRAPHIC COPIER

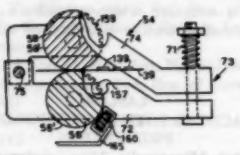
Bruno Cestari, Collegno; Riccardo Forlani, Turin, and Piero Gontero, Cascina Martinetto-Bollengo, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Division of Ser. No. 350,240, Feb. 19, 1982,. This application Jul. 25, 1983, Ser. No. 516,810

Claims priority, application Italy, Feb. 24, 1981, 67250 A/81

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 TR **5 Claims**



1. Electrophotographic copier comprising means for developing a latent image of an original to be reproduced and formed on a photoconductor element, means for transferring the developed image on to a sheet of paper, and a pair of opposing rollers for the cold-fixing of the image transferred on to said sheet, by the action of the pressure between the rollers, said rollers having their axes inclined to each other and at least one roller having a rough surface, wherein said one roller with the rough surface has a peripheral speed greater than the opposing roller of the pair, so that any deformation of the sheet caused by the inclination of the rollers is nullified.

4,486,092

MECHANISM FOR PREVENTING COLLISION OF HALF-SPEED MIRROR FROM OCCURRING IN VARIABLE SCALE FACTOR COPYING APPARATUS

Kazuhiro Ichinokawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1983, Ser. No. 496,735

Claims priority, application Japan, Jun. 22, 1982, 57-93170[U]

Int. Cl.³ G03B *27/34, 27/40, 27/70, 15/30*

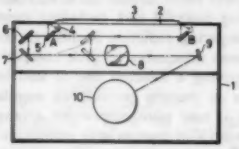
U.S. Cl. 355—8 **6 Claims**

1. A collision preventing mechanism for preventing a collision between a lens system and a half-speed mirror in a variable scale factor copying apparatus for forming an electrostatic latent image through said lens system onto a photo-sensitive drum by scanning an original document by a full speed mirror and said half-speed mirror, comprising:

a half-speed mirror and a lens system;

means for moving said half-speed mirror;

means for moving said lens system to achieve a designated copying scale factor and for further moving said lens system away from said half-speed mirror when an abnormal approach of said half-speed mirror causes said half-speed mirror to be moved into a vicinity of a zone occupied by said lens system to prevent a collision between said half-speed mirror and said lens system; and



detecting means for detecting said abnormal approach of said half-speed mirror.

4,486,093

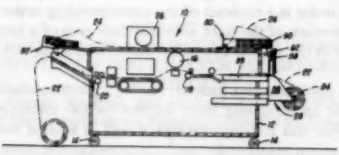
SYSTEM FOR PASSING ELONGATED PAPER THROUGH A REPRODUCING APPARATUS

Thomas A. McNew, 401 NW. 43rd St., Oklahoma City, Okla. 73118

Filed May 4, 1983, Ser. No. 491,438

Int. Cl.³ G03B *29/00*

U.S. Cl. 355—29 **16 Claims**



1. A system for duplicating elongated documents comprising:

a reproducing apparatus;

a document feed tray engaged with the upper side of the reproducing apparatus for feeding thereto an elongated original document to be copied; and

a copy paper roll supporting subassembly detachably mounted on the reproducing apparatus and including:

a copy paper roll supporting frame;

a bracket mounted on the frame;

a detent release lever pivotally mounted on the bracket and having a detent stud thereon and movable therewith;

a cocking lever pivotally mounted on the frame;

elongated resilient paper cutting means having one end connected to the frame and the other end connected to the cocking lever, the cutting means, cocking lever and frame cooperating to engage a central portion of the resilient cutting means over the detent stud when the cocking lever is pivoted in first one direction and then the other; and

actuating means connected to the detent release lever for pivoting the detent release lever to thereby disengage the cutting means from the detent stud when said actuating means is operated.

4,486,094

ORIGINAL HOLDER FOR A PRINTING PLATE PROCESSING APPARATUS

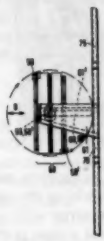
Klaus-Peter Schoen, and Klaus Schmitt, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 420,332

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137786

Int. Cl.³ G03B *27/64*

U.S. Cl. 355—76 **15 Claims**



1. An original holder for a printing plate processing apparatus, said original holder comprising first and second vacuum frames each having a transparent cover plate, a seal provided between each transparent cover plate and the associated vacuum frame, support means for said first and second vacuum frames, said support means comprising U-shaped metal sheets, the backs of which are directed toward each other, and the transparent cover plates of the two vacuum frames facing outward in opposite directions when both vacuum frames are in a folded position adjacent the associated support means, said first and second vacuum frames each being individually pivotably mounted in said support means, means on said support means for pivoting the original holder through an angle of 360°, and means for connecting said first and second vacuum frames to a vacuum source.

4,486,095

MOVEMENT MEASURING APPARATUS AND LANDMARKS FOR USE THEREWITH

David L. Mitchelson, Leicestershire, England, assignor to Movement Techniques Limited, Leicestershire, England

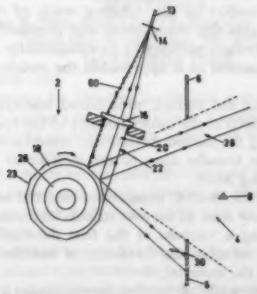
PCT No. PCT/GB81/00104, § 371 Date Feb. 22, 1982, § 102(e) Date Feb. 22, 1982, PCT Pub. No. WO82/00196, PCT Pub. Date Jan. 21, 1982

PCT Filed Jun. 16, 1981, Ser. No. 355,586

Claims priority, application United Kingdom, Jun. 27, 1980, 8021164

Int. Cl.³ G01B *11/26*

U.S. Cl. 356—152 **52 Claims**



1. A movement measuring system using a beam with different spectral components which is reflected by a rotating mirror to scan an observation field containing retro-reflectors filtering incident radiation differently, and using an arrangement responsive to the retro-reflection of different spectral components to produce a signal specific to the landmarks,

characterised in that the beam has a broad-band spectrum and the landmarks have edge filtering characteristics so that retro-reflection from different landmarks produces different but overlapping spectral ranges and in that sensors are exposed to different spectral parts of retro-reflected radiation to produce first signals supplied to an electronic conversion network to de-code the radiation by comparing first signals of a plurality of grouped sensors so as to create a second meaningful landmark detect signal whereas other groups of sensors also receiving retroreflected radiation give a non-discriminating signal to thereby determine the angular positions of the landmarks in the observation field by reference to the phase of mirror rotation at the time a second meaningful landmark detect signal is produced.

4,486,096

DEVICE FOR MEASURING INCIDENT LIGHT

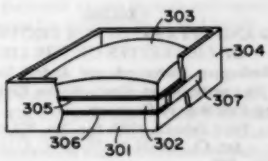
Kiyonobu Endo, and Noriyuki Nose, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 20, 1981, Ser. No. 285,404

Claims priority, application Japan, Jul. 25, 1980, 55/102588; Jul. 25, 1980, 55/102593

Int. Cl.³ G01J *1/42*

U.S. Cl. 356—225 **5 Claims**



1. A system for measuring incident light, comprising:

(a) an optical system defining an optical path;

(b) photo-detecting means;

(c) a plurality of beam splitters each adapted to be disposed in the optical path with, at any one time, only one of said plurality of beam splitters being disposed in the optical path; each of said beam splitters being disposable in the optical path at a predetermined position relative to said photo-detecting means; each of said plurality of beam splitters further having a diffraction grating of a different predetermined area and, upon reception of light from said optical system, forming converging split light which is directed to said photo-detecting means; and

(d) means for measuring the light received by said photo-detecting means, a light converging point of said converging split light being positioned to correspond to the predetermined area of the beam splitter.

4,486,097

FLOW ANALYSIS

Clifford Riley, Burgess Hill, England, assignor to E. I. Du Pont de Nemours & Company, Inc., Wilmington, Del.

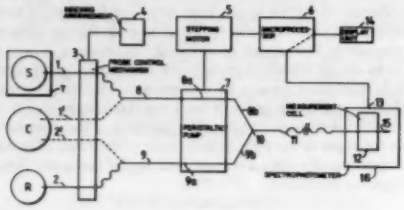
Filed Sep. 9, 1981, Ser. No. 300,660

Int. Cl.³ G01N *35/08*; G01J *3/00*

U.S. Cl. 356—410 **18 Claims**

11. Apparatus for the analysis of liquid samples carried along a flow channel by a carrier liquid, said apparatus comprising a first container for the material a sample of which is to be analyzed; a second container for a reagent to be admixed with said sample; a third container for a carrier liquid; a first hollow probe for insertion into either said first container or said third

container; a second hollow probe for insertion into either said second container or said third container; a probe control mechanism for controlling the placement of said first and second hollow probes; a first conduit communicating with said first hollow probe; a second conduit communicating with said second hollow probe; a common flow channel at one end of which said first and said second conduits come into confluence; a peristaltic pump for effecting aspiration of liquids from



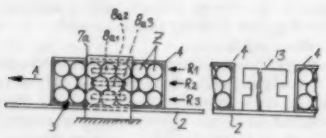
said containers and for pumping said liquids along said first and second conduits and said common flow channel; means for deriving an analytical measurement from material in said common flow channel; drive means for driving the peristaltic pump; and an indexing arrangement arranged to be driven by said drive means and serving to operate said probe control mechanism, said hollow probes being connected to the peristaltic pump for aspiration of liquids from said containers.

4,486,098

METHOD AND APPARATUS FOR TESTING THE ENDS OF CIGARETTES OR THE LIKE

Joachim Buchegger, Richmond, and Andrej Radzio, Quinton, both of Va., assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Feb. 23, 1982, Ser. No. 351,475
Int. Cl.³ G01N *21/55*; B07C *5/342*
U.S. Cl. 356—445 **23 Claims**



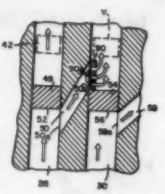
1. Apparatus for testing cigarettes or analogous rod-shaped articles of predetermined diameter which constitute or form part of smoker's products, comprising conveyor means arranged to transport successive groups, each consisting of at least one row of parallel articles, sideways along a predetermined path; testing means adjacent to a predetermined portion of said path and including a testing device comprising at least one detector having a light source, a transducer, and a sensor disposed substantially centrally of the row of parallel articles and having fiber optics arranged to convey light from said source against one end face of each successive article in the rows of successive groups, whereby such end faces reflect light and the extent of light reflection is indicative of the condition, presence or absence of the respective articles, and to convey reflected light to said transducer whereby the latter generates signals denoting the extent of light reflection, said sensor having a substantially rectangular outline in the region of said portion of said path and such outline being formed in part by fibers which supply light and in part of fibers which convey reflected light, one dimension of said outline being a small fraction of said predetermined diameter; and means for processing those signals which are generated during transport of successive groups along said portion of said path.

4,486,099

ROTARY PROCESSORS AND DEVOLATILIZING METHODS FOR PARTICULATE MATERIALS

Zehev Tadmor, Haifa, Israel, assignor to USM Corporation, Farmington, Conn.

Filed Sep. 14, 1983, Ser. No. 532,162
Int. Cl.³ B01F *7/10*
U.S. Cl. 366—99 **29 Claims**



1. A method of processing particulate material containing volatiles dispersed therein comprising the steps of:

(a) spraying the particulate material with a carrier substance;

(b) introducing the material at a feed point to a processing zone including

(i) one or more substantially annular melting zones each defined by two rotatable, substantially circular walls, a coaxial, stationary surface enclosing the melting zone, and a stationary end wall, each melting zone having an inlet point, the inlet point(s) of the melting zone(s) providing the feed point of the processing zone, and an outlet point near the end wall and spaced apart from the inlet point;

(ii) at least a first substantially annular devolatilizing zone defined by two rotatable, substantially circular walls, a coaxial stationary surface enclosing the first devolatilizing zone, and a stationary end wall, and having an inlet point and an outlet point near the end wall and spaced apart from the inlet point; and

(iii) a transfer zone interconnecting the melting zone(s) and the first devolatilizing zone, and defined by a stationary groove and a closure surface, and wherein the upstream end of the groove is open to each melting zone to provide its outlet point and the downstream end of the groove is open to the first devolatilizing zone to provide its inlet point, and having a strand die positioned at the inlet point of the first devolatilizing zone so that the transfer zone and the first devolatilizing zone are interconnected by orifices through the strand die;

(c) rotating the walls of the melting zone(s) at substantially equal velocities, in the same direction from the inlet(s) toward the end wall(s), thereby dragging the material forward through each melting zone;

(d) collecting the material at the melting zone end wall(s) so that relative motion is established between the collected material and the material dragged toward the melting zone end wall(s) by the rotating walls of the melting zone(s) so that the temperature and pressure within the material increases sufficiently to substantially completely melt the material as it approaches the melting zone end wall(s);

(e) discharging the melted, pressurized material from the melting zone(s) at the outlet point(s) to the transfer zone;

(f) transferring the melted, pressurized material downstream through the transfer zone to the inlet point of the first devolatilizing zone;

(g) extruding the melted, pressurized material into the first devolatilizing zone as narrow strands of material;

(h) maintaining a vacuum in the first devolatilizing zone capable of inducing the formation of bubbles containing volatiles in the material;

(i) rotating the walls of the first devolatilizing zone at substantially equal velocities, in the same direction from the inlet point toward the first devolatilizing zone end wall, so

that the material is carried forward through the first devolatilizing zone;

(j) collecting the material as a rapidly recirculating pool at the end wall of the first devolatilizing zone so that shear is induced within the material for bubble rupture and release of the volatiles;

(k) removing the released volatiles from the first devolatilizing zone;

(l) discharging the devolatilized material from the outlet point of the first devolatilizing zone to the next adjacent downstream zone or to a discharge point for the processing zone; and

(m) discharging the devolatilized material from the discharge point of the processing zone.

4,486,100

APPARATUS FOR FEEDING SYNTHETIC RESIN POWDER TO SCREW EXTRUDER

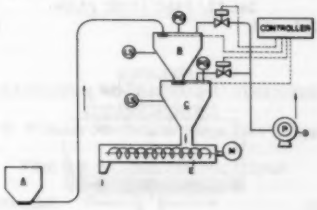
Kaichi Endo; Yoshihiro Katahira; Eiichi Hayashi, and Satoshi Nakano, all of Fukushima, Japan, assignors to Kureha Kogyo Kabushiki Kaisha, Japan

Filed May 25, 1983, Ser. No. 497,913

Claims priority, application Japan, May 27, 1982, 57-90231

Int. Cl.³ B29B *5/00*

U.S. Cl. 366—76 **6 Claims**



1. An apparatus for feeding synthetic resin powder to a screw extruder, comprising; a raw material feed-line connecting a synthetic resin powder tank and a vacuum hopper connected directly to said screw extruder, said feed-line having an at least substantially vertical pipe-line portion at at least one portion in-line with said feed-line, at least one flow restriction means being provided in said vertical pipe-line portion, means for blocking said raw material feed-line and disposed in said pipe-line portion at a portion thereof upwardly of said flow restriction means, said vacuum hopper being connected to a vacuum pump.

4,486,101

APPARATUS FOR BLENDING PARTICULATE MATERIALS

Gurdarshan S. Brar, 8906 Cher Ct., Houston, Tex. 77040

Filed May 9, 1983, Ser. No. 493,058

Int. Cl.³ B01F *13/02*

U.S. Cl. 366—101 **10 Claims**

1. Apparatus for blending particulate materials comprising:

a vessel having a lower end which is a downwardly tapered funnel-like section and an upper end which is provided with an outlet;

vertical tubular means centrally disposed in said vessel having a lower end which provides an inlet into said vessel and an upper end which opens into an upper portion of said vessel;

vertical divider means dividing said tapered second into first and second compartments;

first and second openings provided on opposite sides of said vertical tubular means near said lower end thereof and through which particulate materials may flow by gravity into said tubular means from said first and second compartments, respectively;

adjustable valve means disposed in said lower end of said tubular means by which the flow area of at least one of said first and second openings may be varied so that the mass flow of particulate materials from said first compartment through said first opening may be substantially different than the mass flow of particulate materials from said second compartment through said second opening; and

blower means connected to said lower end of said tubular means providing a stream of air through said tubular means by which particulate materials entering said tubular means through said first and second openings may be entrained therewith exiting through said upper end of said tubular means for redeposition in said vessel.

4,486,102

MIXING APPARATUS FOR MULTI-COMPONENT PLASTICS, ESPECIALLY POLYURETHANE

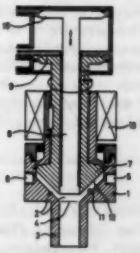
Heino Thiele, Ludwigshafen; Werner Weber, Mannheim; Hans D. Zettler, Gruenstadt; Klaus Schlueter, Munich; Josef Wallner, Holzkirchen, and Bernhard Seid, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 477,963

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3210978

Int. Cl.³ B01F *7/16, 15/02*

U.S. Cl. 366—182 **4 Claims**



1. A mixing apparatus for multi-component plastics, especially polyurethane, comprising a mixing chamber, which possesses inlet orifices for the individual components and an outlet orifice for the component mixture, as well as a control member which can be moved to and fro between a position which leaves the inlet orifices open and a position which shuts off the inlet orifices to the mixing chamber, the control member being constructed as a hollow piston containing an independently controllable expulsion piston, the end face, facing

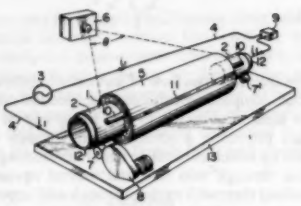
the mixing chamber, of the hollow piston forming the mixing chamber wall opposite the outlet orifice and the outlet orifice being followed by an outlet tube of smaller cross-section than that of the mixing chamber, through which tube the expulsion piston, having the same cross-section as the outlet tube, can be passed, wherein the hollow piston is rotatable and its end face forms a variable shearing gap with the mixing chamber wall nearest the outlet orifice, the gap serving to mix the components.

4,486,103

METHOD OF AND SYSTEM FOR INSPECTING PERFORMANCE OF HEAT-INSULATING LAYER SURROUNDING A PIPE

Masao Ando, Yokohamashi, Japan, assignor to Chisso Corporation, Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,248
Claims priority, application Japan, Sep. 25, 1981, 56-151631
Int. Cl.³ G01N *25/72*
U.S. Cl. 374—5 **7 Claims**



1. A method of inspecting the heat-insulation performance of a heat-insulating layer surrounding the outer wall of a metal pipe, which method comprises

(a) inserting an insulated electrical conductor line through the interior of said metal pipe and maintaining it in said pipe during the time of inspection;

(b) flowing an AC current through said conductor line to thereby induce a secondary induction current in said metal pipe,

(1) said metal pipe having a wall thickness greater than twice the skin depth of the AC current induced therein and flowing therethrough to produce a substantially constant heat generation per unit surface area in said metal pipe,

(c) waiting until the secondary induction current in said metal pipe has caused the outer surface of said heat insulating layer to increase in temperature, and

(d) measuring the temperature of at least a portion of the outer surface area of said heat-insulating layer by means of a non-contact thermometer to thereby ascertain whether there is any variable in the measured temperature over the outer surface of said heat-insulating layer due to non-uniformity in the heat-insulating performance of said heat insulating layer.

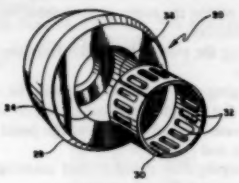
4,486,104

COMPOSITE BEARING

Edward Vezirian, Irvine; Richard J. Ouinones, Garden Grove, and Alan W. Lockstedt, Westminister, all of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Division of Ser. No. 334,499, Dec. 28, 1981,. This application Dec. 2, 1983, Ser. No. 557,560
Int. Cl.³ F16C *33/24*
U.S. Cl. 384—95 **9 Claims**

1. A radial friction bearing ring having composite bearing surfaces adjacent relatively rotating mating members, said ring having a predetermined pattern of circumferentially alternating areas of relatively soft bearing metal and relatively harder wear resisting metal; and wherein said radial friction bearing ring is a discontinuous cylindrical floating ring having a smaller inside diameter composite bearing surface of a first metal and a second metal, and a larger outside diameter composite bearing surface of said first metal and a third metal and wherein said predetermined pattern extends radially through said floating ring.

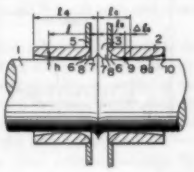


4,486,105

SUPERSONIC EXTERNALLY PRESSURIZED GAS BEARING

Yutaka Miyake, Minoo; Susumu Murata, Nagoya, and Takehiko Inaba, Ikoma, all of Japan, assignors to President of Osaka University, Osaka, Japan

Filed Feb. 2, 1983, Ser. No. 463,137
Claims priority, application Japan, Feb. 5, 1982, 57-17887
Int. Cl.³ F16C *17/02, 17/04*
U.S. Cl. 384—114 **11 Claims**



1. A supersonic externally pressurized gas bearing comprising a bearing portion for supporting a shaft, a gas supply hole formed in said bearing portion, a gas supply pipe connected to said gas supply hole, a first curved surface extending from an inner surface of said gas supply hole continuously to an inner surface of said bearing portion, and a second curved surface formed on the outer surface of said shaft in opposed relation to said first curved surface, wherein a gas flowing path between said first and second curved surfaces is formed so that it gradually becomes narrower as it goes away from said gas supply pipe.

4,486,106

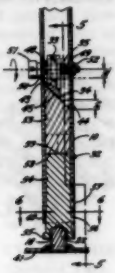
ROTARY SHELF ASSEMBLY

Gary M. Benting, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Filed May 19, 1983, Ser. No. 496,302
Int. Cl.³ F16C *23/02*
U.S. Cl. 384—248 **9 Claims**

1. A rotatable post assembly comprising, first and second bearing members spaced apart and opposing each other, a tubular post disposed lengthwise between said members with first and second ends of the post spaced from and opposing respectively said first and second members, a first bearing element mounted on said post adjacent said first end and operable to engage said first bearing member and journal said first end for rotation about the axis of said post, a slide disposed in said post adjacent said second end thereof to move axially of the post and having a second bearing element projecting axially outwardly of said second end, said second bearing element

being operable to engage said second bearing member to journal said second end of said post, a cam follower on said slide, a cam disposed in said post and engaging said cam follower, said cam being movable transversely of said post and operable



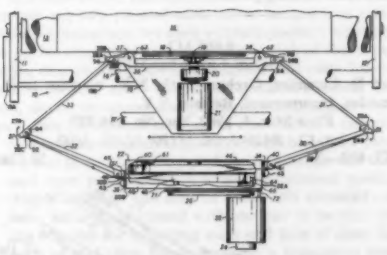
when moved in one direction to cam said slide axially and outwardly of the post to cause said bearing elements to firmly engage the respective bearing members, and a manual operator mounted on said post and connected to said cam to move the cam transversely of the post.

4,486,107

RIBBON GUIDING AND DIRECTING STRUCTURE AND CARTRIDGE

Frederick P. Willcox, 565 Oenoke Ridge, New Canaan, Conn. 06840

Filed Sep. 24, 1982, Ser. No. 422,924
Int. Cl.³ B41J *32/00*
U.S. Cl. 400—208 **14 Claims**



1. A ribbon cartridge assembly, having a case containing ribbon, for use in a printer of a kind having (a) stationary means for receiving said case, and (b) a carriage which is movable with respect to said stationary means along a printing path, said carriage including printing means, comprising:

(a) ribbon guiding means supported by and extending away from said case for guiding the ribbon leaving the case, said ribbon guiding means having first and second ends, said first end being connected to the case, and

(b) ribbon directing means for attachment to and detachment from said carriage, said ribbon directing means being connected to said second end and comprising an expandable and collapsible linkage, which when expanded may be attached to said carriage to guide said ribbon from said ribbon guiding means onto said carriage and around and past said printing means,

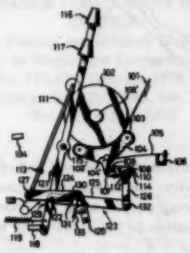
(c) said ribbon directing means being collapsible to minimize the space required for packaging.

4,486,108

SEMI-AUTOMATIC PAPER INSERTION APPARATUS

Yoshitsugu Tanaka, Yokohama, Japan, assignor to Ricoh Company Ltd., Japan

Filed Nov. 5, 1981, Ser. No. 318,410
Claims priority, application Japan, Nov. 6, 1980, 55-156223; Nov. 6, 1980, 55-156224; Nov. 11, 1980, 55-159106
Int. Cl.³ B41J *13/02*
U.S. Cl. 400—639.1 **2 Claims**



1. A semi-automatic paper insertion apparatus for a printer, a typewriter, etc. comprising a platen, a pair of pressure rollers arranged for engagement and disengagement with the platen, and a paper bail pivoted on a shaft for engagement and disengagement with the platen, the improvement wherein the semi-automatic paper insertion apparatus comprises means for bringing the pressure rollers into and out of engagement with the platen, a first lever movable in pivotal movement about a shaft and capable of occupying three different positions including a first position, a second position and a third position, and a linkage linking said means, said first lever and the paper bail to each other, said linkage being operative in such a manner that said paper bail alone is brought out of engagement with the platen when the lever is moved from the first position to the second position, that the pressure rollers are also brought out of engagement with the platen when the lever is moved from the second position to the third position, that the paper bail alone is brought into engagement with the platen when the lever is moved from the third position to the second position, and that the pressure rollers are also brought into engagement with the platen when the lever moves from the second position to the first position.

4,486,109

TOOTHBRUSH ASSEMBLY COMBINING REPLACEABLE BRUSH ASSEMBLY WITH MASSAGING DEVICE

Paul M. Rosofsky, Willingboro, N.J., assignor to Oral Ease Inc., Willingboro, N.J.

Filed Feb. 19, 1982, Ser. No. 350,198
Int. Cl.³ A47L *1/08, 13/12*
U.S. Cl. 401—24 **16 Claims**

12. A toothbrush assembly comprising:

a handle having first and second ends;

a cylindrical shaped recess formed in the first end of said handle;

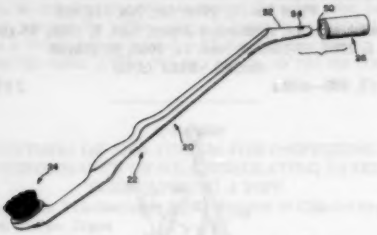
a brush assembly having a base shaped to be received in said recess and an array of bristles protruding from the base;

complementary fastening means having a first component provided in said recess and a second component carried by said base for interconnecting said brush assembly with said recess; and

massaging means for massaging gums comprising a carrier having an internal cavity shaped to mate with the second end of the handle and a material for massaging gums supported by the carrier, the massaging means being removable from the handle; and

wherein said carrier has walls with a plurality of openings

formed therein, and said massaging means further comprises a container of liquid disposed within said internal cavity of said carrier and so positioned as to disperse



liquid upon insertion of the second end of the handle into the internal cavity, said massaging means covering said openings and being porous so as to absorb the dispensed liquid for application to the gums being massaged.

4,486,110

PENCIL FOR COSMETIC PURPOSES

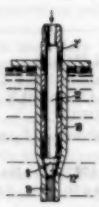
Peter Krückel, Nuremberg, and Wolfgang Winkler, Lauf, both of Fed. Rep. of Germany, assignors to Schwan-Stabilo Schwanhausser GmbH & Co., Nuremberg, Fed. Rep. of Germany

Division of Ser. No. 863,322, Dec. 22, 1977, Pat. No. 4,230,655. This application Jan. 23, 1980, Ser. No. 114,494

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1977, 2718957

Int. Cl.³ B43K *19/02*

U.S. Cl. 401—96 4 Claims



1. A cosmetic pencil comprising: a hollow tubular shaft of a material which can be sharpened, a stick of a cosmetic composition cast into said shaft and firmly enclosed by said shaft, the cast stick having at one end a cast point integral therewith, extending beyond said shaft, and rounded off to a convex shape, the shaft having an end adjacent to the exposed stick point in the shape of a truncated cone the outside of which merges with the outer surface of the stick point, there being a flush transition from the peripheral surface of the stick point to the outer surface of the shaft, and at the transition from the shaft to the stick point, the latter having a projecting shoulder, an annular end face of the shaft resting against the shoulder, and the extent of the shoulder radially of the stick corresponding to the width of said end face of the shaft.

4,486,111

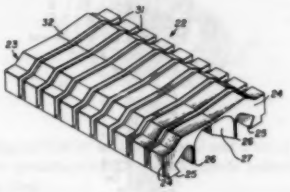
DATA BINDER SLIDE

Loren J. Hulber, Edina, Minn., and William D. Stuertz, Glenview, Ill., assignors to Jostens, Inc., Minneapolis, Minn.

Filed Sep. 29, 1982, Ser. No. 426,714

Int. Cl.³ B42F *13/00*

U.S. Cl. 402—17 3 Claims



1. A data binder for receiving and retaining a plurality of sheets having holes punched therein, comprising: a pair of elongated compressor bars including a rail on each longitudinal edge thereof defining a longitudinal channel therebetween, said compressor bars having at least two holes formed therebetween and spaced for engagement with at least two holes of said plurality of sheets; at least one pair of flexible posts, each of which is constructed and arranged for insertion through one of said holes and for alignment with the channels; and at least one slide member slidably mounted on the compressor bars, said slide member having a body with two ends including web portion means for bridging the channel and for slidably engaging the longitudinal rails, said web portion means each also having a pair of longitudinally extending downwardly depending spaced apart ribs defining a post receiving groove in contact with said channel, said groove being flared out at each end of said slide member such that the outer ends of the groove are substantially larger than the central portion of the groove, said flared post receiving grooves each providing a guide for an end of said flexible posts.

4,486,112

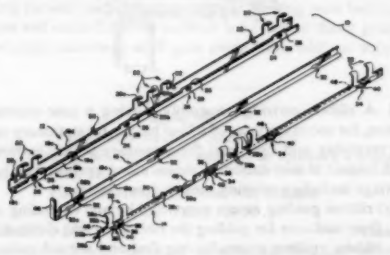
LOOSE LEAF BINDER

Richard D. Cummins, Orchard Park, N.Y., assignor to R. D. Cummins, Incorporated, Buffalo, N.Y.

Filed Mar. 4, 1982, Ser. No. 354,537

Int. Cl.³ B42F *3/04, 13/20, 13/02, 3/00*

U.S. Cl. 402—34 33 Claims



1. In a loose leaf binder construction, the combination comprising:

a frame including an elongated base and a plurality of stationary claw halves, said base having first and second opposite side portions upstanding from a connecting portion, said stationary claw halves are joined to upstand from said first of said side portions and said second of said side portions defines stationary hinge means;

a gate including an elongated gate connecting portion and a

plurality of movable claw halves joined to upstand from said gate connecting portion, said gate connecting portion having movable hinge means cooperating with said stationary hinge means for supporting said gate for swinging movement between closed and open positions, wherein free ends of said movable claw halves are positioned adjacent to and removed from adjacent free ends of said stationary claw halves, respectively; and

an elongated operating slide member supported for sliding movements lengthwise within said base, said slide member and said gate connecting portion defining cooperating cam and cam follower means for controlling swinging movement of said gate between said closed and open positions incident to oppositely directed sliding movements of said slide member lengthwise of said base.

4,486,113

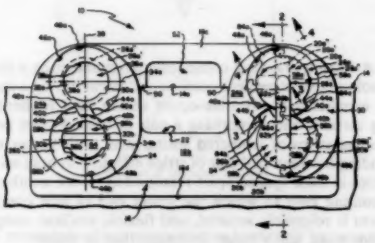
CLAW BINDER

Richard D. Cummins, Orchard Park, N.Y., assignor to R. D. Cummins, Incorporated, Buffalo, N.Y.

Filed Sep. 29, 1982, Ser. No. 428,266

Int. Cl.³ B42F *3/04, 13/16, 13/00, 13/12*

U.S. Cl. 402—80 P **13 Claims**



1. In a claw binder construction having a base to be fixed to a support and two pairs of claw halves mounted on said base for relative movement between a closed position, wherein said claw halves cooperate for supporting a stack of sheets on said support, and an open position, wherein said claw halves are moved relatively apart to permit addition/removal of said sheets, the improvement comprising in combination:

each claw half of each said pair of claw halves is mounted on said base for rotational movement about an axis disposed normal to said base from said closed position and through said open position into a mounting/removal position in which said claw half may be removably mounted on said base, said base is formed with one pair of parallel mounting recesses for mounting each said pair of claw halves, each of said claw halves includes a supporting member removably and rotatably mounted within one of said mounting recesses and a claw element having a shank portion fixed to upstand from said supporting member and a closure end portion joined to said shank portion remotely of said supporting member, said claw halves of each pair having free ends of their closure end portions shaped to interfit one with the other when said pair of claw halves are in said closed position, the first said pairs of claw halves forming one group of pairs of claw halves characterized as having shank portions of a given length, and there is further provided in combination at least one additional group of pairs of claw halves interchangeably mounted with the claw halves of said one group and characterized as having shank portions of a length other than said given length, said mounting recesses each include a discontinuous circumferentially extending mounting rib whose free ends are spaced to define a first clearance opening, each said supporting member is formed with circumferentially aligned, diametrically opposite and radially outwardly opening guide slots sized to freely and slidably receive said mounting rib of one of said mounting recesses for mounting said supporting member therewithin, and one of said guide slots having an arcuate length less than that of said first clearance opening is aligned therewith upon movement of its associated one of said claw halves into said mounting/removal position to permit removable mounting thereof on said base.

4,486,114

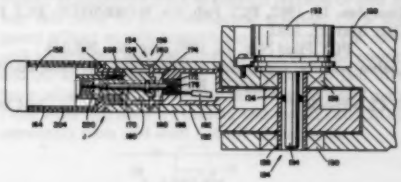
INTERCHANGEABLE COMPONENT IDENTIFICATION SYSTEM

Dale C. Rudolph, Parker, and Michael D. Ray, Denver, both of Colo., assignors to Technicare Corporation, Solon, Ohio

Division of Ser. No. 972,435, Dec. 22, 1978, Pat. No. 4,244,227. This application Sep. 29, 1980, Ser. No. 191,577

Int. Cl.³ B25G *3/00*

U.S. Cl. 403—27 **2 Claims**



1. A pivot assembly comprising:

(a) bearing means mounted to a first arm;

(b) a cylindrical axle rotatably mounted in said bearing means and fixedly mounted to a second arm;

(c) a potentiometer having a rotatable shaft for varying the resistance of the potentiometer, said potentiometer fixedly mounted to said first arm and the rotatable shaft disposed along the axis of said cylindrical axle; and

(d) resilient connecting means for connecting said shaft and said axle whereby said shaft and said axle rotate together.

4,486,115

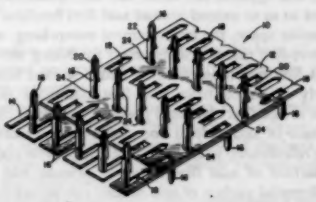
CONNECTOR PLATES

Carlos Rionda, and Robert Gottlieb, both of Miami, Fla., assignors to Gang-Nail Systems, Inc., Miami, Fla.

Filed Mar. 2, 1982, Ser. No. 354,038

Int. Cl.³ B25G *3/28*

U.S. Cl. 403—283 **11 Claims**



1. A connector plate for joining first and second members, comprising:

a plate member having a plurality of teeth struck therefrom and extending outwardly from the plate, said teeth being located at longitudinally spaced positions along the plate with slots left by the striking of said teeth extending away from the base of said teeth, said plate member having a plurality of apertures which are so aligned with said teeth as to be capable of receiving and interengaging with the teeth of a second plate member, such interengagement providing for both plate members to be joined in face to face contact when aligned and with teeth extending from each plate member through apertures in the other plate

member, said teeth being arranged in repeating patterns of two rows of teeth and slots extending transversely across the plate, with two rows of apertures being located transversely across the plate between successive patterns of two transverse rows of teeth.

4,486,116

FRICTION JOINT FOR JOINING TOGETHER MACHINE ELEMENTS

Kari Sassi, Lohja, Finland, assignor to Konejukka Oy, Finland

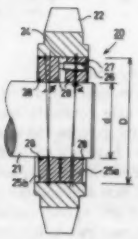
PCT No. PCT/FI81/00084, § 371 Date Jun. 17, 1982, § 102(e) Date Jun. 17, 1982, PCT Pub. No. WO82/01750, PCT Pub. Date May 27, 1982

PCT Filed Nov. 16, 1981, Ser. No. 395,034

Claims priority, application Finland, Nov. 18, 1980, 803596

Int. Cl.³ B25G *3/20*

U.S. Cl. 403—367 **14 Claims**



1. In a friction joint for both axially and rotatably fixing a first machine element with respect to a second machine element, said first machine element being partially received in a cavity formed in said second machine element to define an annular space between an outer surface of said first machine element and an inner cavity-defining surface of said second machine element, the friction joint including at least one sleeve-like member having inner and outer circumferential surfaces and opposed end faces, said sleeve-like member being mounted so as to extend around said first machine element in said annular space, the improvement comprising: said at least one sleeve-like member is mounted for tilting movement between a first non-tilted position and a second tilted position angularly displaced from said first non-tilted position and wherein in said first non-tilted position, said inner circumferential surface of said at least one sleeve-like member is in non-locking relationship with and free to rotate with respect to said outer surface of said first machine element and said outer circumferential surface of said at least one sleeve-like member is in non-locking relationship with and free to rotate with respect to said inner cavity-defining surface of said second machine element and wherein in said second tilted position, said inner circumferential surface of said at least one sleeve-like member frictionally interlocks with said outer surface of said first machine element and, simultaneously therewith, said outer circumferential surface of said at least one sleeve-like member frictionally interlocks with said inner cavity-defining surface of said second machine element to prevent both axial and rotational movement of said first and second machine elements with respect to each other, and means for tilting said at least one sleeve-like member from said first non-tilted position to said second tilted position.

4,486,117

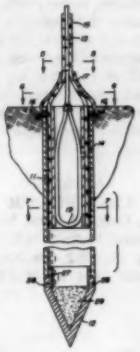
FLEXIBLE TRAFFIC STANDARD

Herbert Blau, Philadelphia, Pa., assignor to Blau & Lapides, Inc., Philadelphia, Pa.

Filed Aug. 24, 1981, Ser. No. 295,787

Int. Cl.³ E01F *9/01*

U.S. Cl. 404—10 **5 Claims**



1. A flexible standard comprising in combination a linearly extending flexible resilient composite element having a resilient core member and a flexible cover sheath, said resilient core being metallic and comprising a pair of spaced apart parallel extending strips of tempered spring steel with spacer means extending between said pair of strips effective to hold said pair of strips in fixed spaced apart relationship to one another, and a mounting base to which the lower end of said composite element is releasably secured, said flexible resilient composite element being much longer in length than in width.

4,486,118

ARRANGEMENT FOR BRIDGING EXPANSION JOINTS IN CARRIAGE WAYS, ESPECIALLY BRIDGES

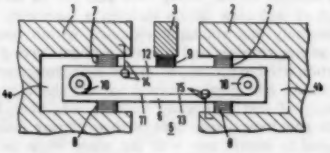
Reinhold Huber, Winzerweg 21, Bulach CH8180, Switzerland, and Waldemar Koster, Im Tentefeld 17, Forsbach D-5062, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 513,928

Claims priority, application Switzerland, Jul. 19, 1982, 3226970

Int. Cl.³ E01C *11/02*

U.S. Cl. 404—56 **8 Claims**



1. A device for bridging expansion joints in carriageways comprising: at least one plate which runs at right angles to the carriageway and defines a top surface adjacent to the surface of the carriageway; a plurality of bars which run at right angles to the expansion joint and at least some of which support said plates from beneath and transfer loads to the edges of the carriageway adjacent to the joint; a plurality of control cables; means on a corresponding plurality of said bars guiding each said control cable in a closed path fixed with respect to a respective said bar and forming two straight cable runs parallel to the respective said bar; means fixing each said bar that has a

control cable to a said plate at a central region of said bar; and a connection between each said cable run and one selected from other said plates and edge portions of the carriageway, the length of said cable runs being at least equal to the horizontal distance between said connections when the expansion joint is at its maximum opening.

4,486,119

MESOPHASE DUPE CONTAINING CELLULOSE DERIVATIVE AND INORGANIC ACID

Kenji Kamide, Ikoma; Kunihiko Okajima, and Toshihiko Matsui, both of Takatsuki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

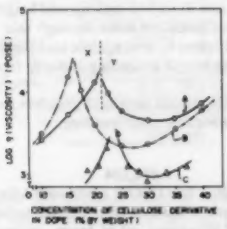
Division of Ser. No. 188,854, Sep. 19, 1980, Pat. No. 4,370,168. This application Aug. 2, 1982, Ser. No. 404,299

Claims priority, application Japan, Sep. 21, 1979, 120718; Sep. 25, 1979, 121960

The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.

Int. Cl.³ C08L *1/08, 1/12*

U.S. Cl. 106—177 **5 Claims**



1. A mesophase dope comprising at least 10% by weight of at least one cellulose ester having a degree of substitution (DS) of less than 2.7 and being dissolved in an aqueous solution of at least 5% by weight of at least one inorganic acid, said dope exhibiting a mesophase property even in the case where no fluid dynamic stress is applied thereto.

4,486,120

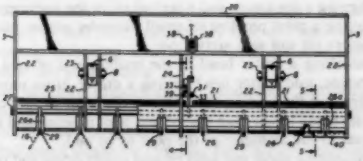
SPREADER BAR FOR SOIL EROSION PREVENTION MATS

Kossuth J. Landry, Jr., P.O. Box 599, Channelview, Tex. 77530

Filed Nov. 25, 1980, Ser. No. 210,328

Int. Cl.³ E02B *3/12*; B66C *1/66*

U.S. Cl. 405—17 **1 Claim**



1. A spreader bar for lifting and laying a matrix of soil erosion prevention blocks, said matrix including two cables disposed through said blocks and being connected together at the ends thereof to form loops for lifting said blocks, said spreader bar comprising:

a. a frame including (1) two extended main beams, (2) a plurality of cross beams fixed between said main beams, (3) a plurality of frame extension plates affixed to the ends of said main beams, and (4) a plurality of stanchions having stanchion plates affixed to said main beams, said stanchions cooperating with stanchion cables to minimize bending of said frame when said soil erosion prevention blocks are lifted, said stanchion cables being situated over said stanchions and being attached at either end to a plurality of lifting pad eyes welded to said main beams of said frame for lifting said spreader bar;

b. at least one hinged cable carrier mounted to said frame, said cable carrier comprising: (1) an upper beam and a lower beam, (2) a plurality of apertured support plates attached between said upper and lower beams for receiving therethrough cable carrier hinge pins and a rotationally mounted shaft having at least one standard cable hook affixed thereto for engaging said cable of said matrix of soil erosion prevention blocks, said shaft being mounted through said support plates, (3) an arm affixed to said shaft so as to permit rotation of said shaft for engagement or disengagement of said cables, (4) a latch mechanism for locking said hook in cable engaging position having a latch bar pivotally mounted with said arm, said mechanism also including a spring to urge said latch bar downwardly behind a latch lug to prevent rotation of said arm and said shaft to the nonengaged position, (5) a hook guard affixed to said lower beam for closing the end of said hook when said cable carrier is in engaged position, and (6) at least one stripper ridge affixed to said lower beam adjacent said hook to aid in disengaging said matrix cable from said hook by causing said matrix cable to ride outwardly from said shaft and off of said hook.

4,486,121

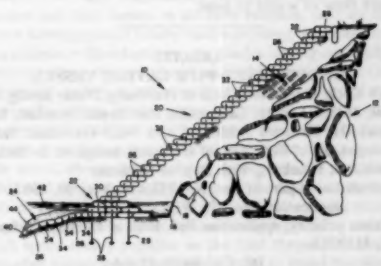
STABILIZATION AGAINST WATER EROSION

Wayne L. Thompson, Cypress, and Bert E. Bailey, Houston, both of Tex., assignors to Ercon Corporation, Houston, Tex.

Filed Apr. 15, 1982, Ser. No. 368,878

Int. Cl.³ E02B *3/12*

U.S. Cl. 405—17 **12 Claims**



1. A protection structure for protecting the base of a bank structure against underscouring by water action, the protection structure comprising:

(a) a plurality of sacks of cementitions material which are positioned in side-by-side relationship in a layer which rests on a bed surface adjacent the base of the bank structure to form a protective skirt which extends from the base of the bank structure;

(b) a plurality of staples, each staple comprising a base portion and a pair of arms which extend transversely to the base portion from opposed ends of the base portion;

(c) the staples having their arms impaled into adjacent sacks of the layer forming the protective skirt so that the staples connect such adjacent sacks together with the base portions of the staples extending between such adjacent sacks;

(d) the staples being resiliently deformable so that the sacks of the protective skirt can move relatively to each other through deformation of the deformable staples to allow the protective skirt to be capable of articulation so that it can settle to accommodate underscouring during use; and

(e) the protective skirt being connected to the bank structure.

4,486,122

METHOD AND DEVICE FOR REDUCING THE RISK OF FREEZING OF SURFACE-WATER PIPE-LINE SYSTEMS

Oscar S. Arntyr, Wallingatan 37, S-111 24 Stockholm, and Thord I. Engström, S-950 18 Bensbyn, both of Sweden

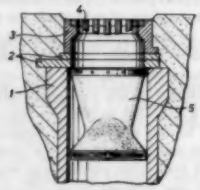
PCT No. PCT/SE82/00043, § 371 Date Sep. 23, 1982, § 102(e) Date Sep. 23, 1982, PCT Pub. No. WO82/02913, PCT Pub. Date Sep. 2, 1982

PCT Filed Feb. 11, 1982, Ser. No. 433,121

Claims priority, application Sweden, Feb. 16, 1981, 8101045

Int. Cl.³ E03B 5/04

U.S. Cl. 405—157 6 Claims



1. Pipe-line system for surface-water including a plurality of drains and other inlets, such as rain-water drains, manholes and inlets from terrace and roof guttering, etc., characterized in that in order to reduce the risk of freezing of the system special means (5) are mounted in at least some of the drains (1) or other inlets which are so located that the flow of air therethrough can be heavy, said means (5) being arranged to reduce such heavy flow of air in both directions through the respective drain but not to prevent some ventilation of the system and designed to permit a small flow of water to pass directly therethrough without appreciable gathering of water in said means and to be automatically opened when required to permit a greater flow of water to pass.

4,486,123

UNDERWATER PIPE LAYING VESSEL

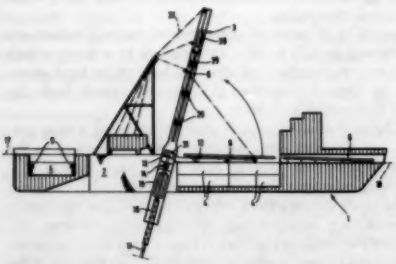
Ulrich Koch; Peter Plotz, both of Hamburg; Dieter König, Seevetal; Jochen Langer, Langenfeld; Burkhardt Switaiski, Meerbusch; H. Heinrich Schindler, and Willi Wesselski, both of Cologne, all of Fed. Rep. of Germany, assignors to Blohm & Voss AG, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 363,439, May 30, 1982,. This application Sep. 17, 1982, Ser. No. 419,697

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112785

Int. Cl.³ B63B 35/04

U.S. Cl. 405—169 26 Claims



1. An underwater pipe laying vessel of the type which installs an underwater pipeline by progressively welding and adding shorter lengths of pipeline to a free end of a pipeline is progress, the vessel having at least one deck and comprising:

a well which is formed substantially at the center of the vessel and extending from a vessel deck-level to a bottom of the vessel;

a pipe laying boom of hollow construction mounted within said well and having a through longitudinal passage which in use accepts said lengths of pipeline to be added on by welding to said free end of the pipeline, said boom having a lower end which penetrates and extends beyond the bottom of the vessel;

a swivel mounting means which mounts said boom inside said well, said swivel mounting means having a horizontal swivel-mount axis about which said boom can be given controlled oscillatory movement;

control means to control an oscillatory position of said boom about said swivel-mount axis;

guiding support means disposed at substantially the lower end of said longitudinal passage of said boom to support and guide said free end of said pipeline in progress during use;

butt-welding means disposed within said longitudinal passage to enable welding of said free end of the pipeline in progress with a mating end of an added length of pipeline;

swivel means having a length and swiveled about a horizontal axis substantially close and parallel to said horizontal swivel-mount axis to pick to pick up said length of pipeline to be added and guide the same through said longitudinal passage of said boom to abut against said pipeline free end, said swivel arm length extending radially from said horizontal axis;

means to lower the added length of pipeline from said hollow boom downwards after welding.

4,486,124

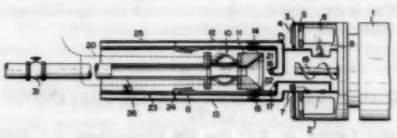
PIPE LAYING METHOD AND APPARATUS

Toshikazu Yamamuro, Odawara; Masami Shiotsubo, and Hiroshi Saito, both of Hiratsuka, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 12, 1983, Ser. No. 541,203

Int. Cl.³ F16L 1/02

U.S. Cl. 405—184 8 Claims



1. A method of laying a pipe in the underground comprising the steps of:

(a) digging a departure and a arrival pit in the underground;

(b) laying a pilot pipeline of small diameter across said departure pit and said arrival pit;

(c) attaching a cutter head to the trailing end of said pilot pipeline, said cutter head having a cutter drum mounted thereto at the leading end thereof, diameter of said cutter drum being larger than that of said pilot pipeline and about equal to the diameter of the pipe to be laid;

(d) excavating earth and sand by said cutter drum and taking excavated earth and sand into an inside chamber of said cutter drum;

(e) supplying water into the chamber by utilizing said pilot pipeline to thereby convert the excavated earth and sand into a slurry state;

(f) discharging the slurried earth and sand into a tank provided in the arrival pit by utilizing said pilot pipeline;

(g) pushing the trailing end of said cutter head by a propulsion jack installed in the departure pit to thereby push said cutter head into the underground;

(h) connecting a pipe to be laid to the trailing end of said cutter head;

(i) repeating the steps (d) to (f) above; and

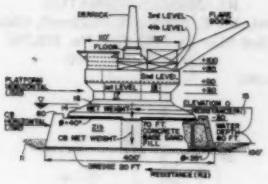
(j) pushing the trailing end of said pipe to be laid by said propulsion jack to thereby push said pipe into the underground.

4,486,125

MODULAR ARCTIC STRUCTURES SYSTEM

Gerhard H. Reusswig, Irving, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,827
Int. Cl.³ E02B *17/02;* E02D *23/02*
U.S. Cl. 405—217 18 Claims



1. A floatable and reusable modular offshore oil and gas production or exploration platform system, said system being particularly adapted for arctic environments, said system comprising in combination:

(a) a floatable base member towable to an exploration or production site, said base member including;

i. ballasting means for lowering the base member below the water plane to an offshore ocean floor;

ii. said floatable base member defining a first massive base that extends upwardly to a predetermined distance below the main water plane for supporting said offshore exploration or production platform, said first massive base providing lateral load resistance therefor by gravity engagement with the ocean floor; and

iii. an upwardly extending annular rim;

(b) a plurality of temporary buoyancy caissons which are attached to said first base member before ballasting;

(c) means for filling the annular space defined by said rim with sea water to provide an interior lake on the top surface of said base, said interior lake and said buoyancy caissons balancing said base member as it is ballasted below the water plane;

(d) an offshore exploration or production platform, said platform member towable to said exploration or production site, said platform member comprising;

i. ballasting means for lowering the platform onto said first base member;

ii. a steel gravity structure having a conical sloping surface at the mean water plane defined by the height of said first base member and said platform, said sloping surface forming an ice shield upon use in an arctic environment; and

(e) said base member and said platform including at least one vertically extending aperture for oil and gas exploration or production,

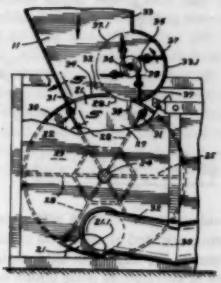
whereby the platform and the first base member are separately deballastable at the end of the exploration or production service and refloatable to a new exploration or production site.

4,486,126

PNEUMATIC CONVEYOR FOR SILAGE AND HAYLAGE

John Hellerman, Rte. 2, Melrose, Minn. 56352, assignor to John Hellerman, Melrose, Minn.

Filed Jun. 11, 1982, Ser. No. 387,435
Int. Cl.³ B65G *53/46*
U.S. Cl. 406—67 7 Claims



1. Apparatus for pneumatic conveying of silage-haylage comprising

duct means for confining the flow of air under pressure and carrying significant quantities of silage-haylage,

an air pump means generating significant air pressure to establish the flow in the duct means,

an air lock between the pump means and duct means and in air flow communication therewith, the air lock having a housing confining a revolving air lock rotor having a generally cylindrical peripheral wall and opposed end walls, the end walls having lower portions with aligned air ports therein and respectively connected with the pump means and duct means in air flow relation, said air lock rotor having spaced rotary blades defining material carrying chambers therebetween, the blades having outer edges moving along the peripheral wall of the housing in close fitting air sealing relation and revolving in a direction to move the rotary blades across a receiving opening in an upper portion of the peripheral wall and across a downstream boundary edge of the receiving opening,

guide means above the receiving opening in the peripheral wall and defining a silage-haylage feed throat through which such silage-haylage is directed through the receiving opening and into the air lock housing, and

a high speed rotary impeller in the feed throat and having impeller blades swinging downwardly to impel the silage-haylage into the air lock housing and swinging across the boundary edge in the same direction as said air lock rotor and in closely spaced relation therewith to wipe the edge free of silage-haylage.

4,486,127

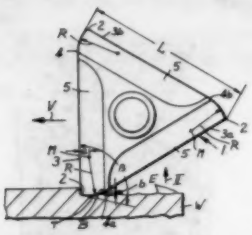
TRIANGULAR INDEXABLE CUTTING PLATE FOR LATHE TOOLS

Otto Eckle, Löchgau, Fed. Rep. of Germany, assignor to Komet Stahlhalter- und Werkzuegfabrik, Robert Breuning GmbH, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,394
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 8125049[U]
Int. Cl.³ B23B *27/16;* B26D *1/00*
U.S. Cl. 407—114 5 Claims

1. In a triangular indexable cutting plate for precision machining wherein the length of all three sides is the same, one of said sides being a main cutting edge, the remainder of said sides being auxiliary cutting edges, wherein a main cutting edge defines an acute angle with an adjoining auxiliary cutting edge, and a radius is provided at the transition between said main

cutting edge and said adjoining cutting edges, comprising the improvement wherein said radius (R) is uniformly curved between said main cutting edge and said auxiliary cutting edge and is in the range of 0.15 to 0.3 times the size of the length (L)



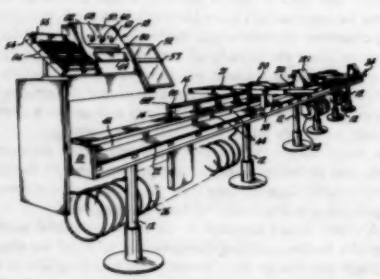
of said sides of said indexable cutting plate, the centre (M) of said radius (R) being oriented at said main cutting edge or at a perpendicular distance (a, a1) from said main cutting edge towards the centre of said cutting plate which is up to 0.3 times said radius (R).

4,486,128

STRUCTURAL COMPONENT DRILLING MACHINE HAVING PROGRAMMABLE DRILLING LOCATION INDEXING

Irwin G. Baker, Bellevue; Robert L. Fuller, Jr., Issaquah, and Dwayne E. Proff, Puyallup, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 15, 1981, Ser. No. 331,078
Int. Cl.³ B23B *41/00, 49/00*
U.S. Cl. 408—3 **12 Claims**



1. An indexing and control system for a drill carriage used to drill holes in a workpiece, said drill carriage being slidably mounted on an elongate rail, said indexing and control system comprising:

a plurality of detents formed at preselected locations along said rail;

a cam follower means associated with said drill carriage for cooperatively engaging said detents to coarsely position said carriage at the location of said detent;

index-cancelling means associated with each of said detents and operable to prevent said cam follower means from engaging said detents;

control means for selectively operating said index-cancelling means;

program means having information encoded thereon cooperably associated with said control means for directing said control means as to which index-cancelling means are to be selectively operated;

visually perceptible code means formed on said program means providing a visually perceptible read-out of the information encoded on said program means;

read-out means for displaying a visual indication of the status of said index-cancelling means to provide a visually perceptible comparison between the status of said index-cancelling means and the information encoded on said program means;

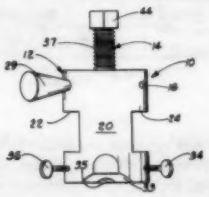
fine positioning means associated with said drill carriage and operable upon engagement of said cam follower means with said detent to lock said drill carriage into the desired position, said fine positioning means including a drill block mounted on said rail at each of said predetermined drilling locations, each said drill block having an aperture formed therein, a locating bushing mounted in said aperture in said drill block, a fine positioning pin means associated with said drill carriage and operable to engage said locating bushing, limit switch means associated with said cam follower means, said limit switch providing an enabling signal to said fine positioning pin means upon engagement of said cam follower means with said detent.

4,486,129

REAMING APPARATUS

James A. Vowel, 204 E. Blackwell, Blackwell, Okla. 74631

Filed May 17, 1982, Ser. No. 378,790
Int. Cl.³ B23B *41/00*
U.S. Cl. 408—106 **10 Claims**



1. Apparatus for scraping a pipe and glue from the radially inner surface of a pipe bell to which the radially outer pipe surface is glued, said pipe bell having a predetermined depth and said pipe being cut substantially flush with the end of said bell, said apparatus comprising:

a cylindrical housing having upper and lower ends;

a first cylindrically shaped chamber formed at the lower end of said housing and communicating with the exterior thereof, said first chamber having a radially inner diameter of a size sufficient to receive such a pipe bell therein;

a second cylindrically shaped chamber formed above said first chamber in said housing, said second chamber communicating with said first chamber and being coaxial therewith;

a downward facing annular shoulder formed at the juncture of said first and second chambers for abutment against the end of such a pipe bell, said shoulder having a preselected longitudinal position on said housing;

a threaded bore formed through the upper end of said housing and having its longitudinal axis in alignment with the longitudinal axes of said chambers;

a bolt having a preselected length threadably received in said bore, said bolt extending into said first chamber responsive to rotation thereof;

a reamer mounted on the lower end of said bolt for scraping the radially inner surface of such a pipe bell when it is abutted against said annular shoulder; and

a head fixedly attached to the upper end of said bolt, said head having a lower side which is substantially parallel to the upper end of said housing, said head preventing further bolt extension into said first chamber when the lower side thereof abuts against said upper housing end, said preselected bolt length and said preselected longitudinal shoulder position being selected relative to one another so that reamer scraping can extend to the depth of such a pipe bell when it is abutted against said shoulder, but not therebeyond.

4,486,130

ROTARY TOOL WITH TOOL POSITIONING ADJUSTMENT

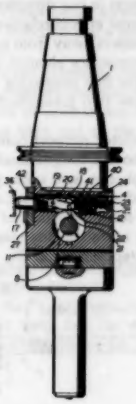
Willi Lipp, Fröbelstr. 62, D-5810 Witten, Fed. Rep. of Germany

Filed Sep. 9, 1982, Ser. No. 416,133

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136204

Int. Cl.³ B23B *27/16*

U.S. Cl. 408—181 9 Claims



1. A rotating tool comprising:

a tool carrier adapted to be received in a rotating spindle of a machine tool;

a support on said carrier shiftable laterally of the axis thereof;

a cutting member mounted on said support;

an actuating element on said carrier displaceable relative to said carrier by engagement of said element with an abutment; and

a mechanism on said carrier connecting said element with said support for translating displacement of said element into adjustment of the position of said support relative to said carrier, said element being a plunger projecting laterally from said carrier and displaceable orthogonal to the axis of rotation thereof, said mechanism including a stepping device connecting said element to said support and comprising:

a pawl operatively connected with said plunger,

a ratchet wheel cooperating with said pawl for the stepping of said ratchet wheel upon actuation of said plunger,

a threaded spindle coupled with said ratchet wheel, and

a nut threadedly engaging said threaded spindle, said nut and threaded spindle acting upon said support.

4,486,131

TURNING TOOL FOR MACHINING THE ENDS OF SHAFTS, JOURNALS, TUBES AND THE LIKE

Otto Eckle, Löchgau, Fed. Rep. of Germany, assignor to Komet Stahlhalter-und Werkzeugfabrik, Robert Breuning, GmbH, Besigheim, Fed. Rep. of Germany

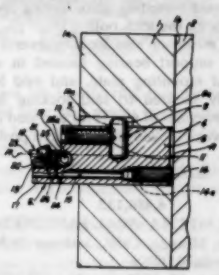
Filed Jun. 14, 1982, Ser. No. 388,332

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 8120797

Int. Cl.³ B23B *29/03*

U.S. Cl. 408—185 12 Claims

1. A turning tool having a disc-shaped base element adapted to be connected to a rotatable spindle of a tool machine, said turning tool comprising: a plurality of toolholders and mounting means for mounting said toolholders on said base element, each of said toolholders having a bracing surface on which at least one cutting plate support is mounted, means for facilitating an adjustment of said cutting plate support radially of the axis of rotation of said base element and independent of any adjustment of the position thereof in a direction parallel to said axis of rotation, clamping means for fixing the radial position of said cutting plate support to said bracing surface, said mounting means including for each said toolholder at least one cylindrical housing bore in said base element, the axis of which extends parallel to said axis of rotation, each said toolholder having a cylindrical shank fitting into said cylindrical bore, each said toolholder having an adjusting screw thereon which extends parallel to said axis of rotation and the axis of said cylindrical shank, and is braced against at least one of said base element and a head part on said base element for effecting an axial adjustment of said cylindrical shank and thereby the axial position of said cutting plate support, and clamping and securing means provided between said shank and said base element for securing said cylindrical shank against rotation with respect to said base element and for securing the axial position of



said shank, said clamping and securing means including a radially extending opening in said shank a clamping pin provided in said opening in said shank, an axially extending threaded bore in said shank intersecting said radially extending opening, a clamp pin adjusting screw in said threaded bore, an axially extending groove recessed into a wall of said cylindrical housing bore and in a plane oriented perpendicularly to the radial adjustment direction of said cutting plate support, the length of said axially extending groove being arranged in a plane parallel to said axis of rotation and containing said axis of said housing bore, which plane is perpendicular to the plane defined by said axis of said housing bore and said axis of rotation of said turning tool said clamping pin being operatively engaged and radially adjusted relative to said cylindrical shank by means of said clamp pin adjusting screw, said clamp pin being radially movable into and out of engagement with groove.

4,486,132

DEVICE FOR FRONT END LOCKING OF CONTAINERS

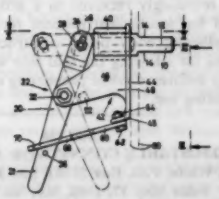
Gerd Schulz, Besselstrasse 9, Fed. Rep. of Germany, and Hans-Peter Hartleif, Rothergskamp 20 c, both of 2100 Hamburg 90, Fed. Rep. of Germany

Filed Oct. 5, 1981, Ser. No. 308,458

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1980, 3038461

Int. Cl.³ B60P *7/08, 7/13;* B61D *45/00*

U.S. Cl. 410—81 7 Claims



1. A device for the front end locking of containers on a chassis comprising:

a lock bolt,

a guideway, said lock bolt being movable between a locking position in which one end of said lock bolt protrudes from one end of said guideway and a release position in which said one end of said lock bolt is retracted into said guideway,

an operating handle pivotally secured at one end to said lock bolt, said handle being pivotally mounted on a holding fixture for movement in a first plane,

said guideway and said holding fixture being jointly fixed on a mounting plate, said mounting plate being oriented perpendicular to said first plane within which said operating handle is movable,

said mounting plate being located on one end of said guideway, said one end of said guideway being that end from which said lock bolt protrudes in the locking position of said lock bolt,

a locking lever, said mounting plate having one end section spaced away from the lock bolt,

handle blocking means on said locking lever,

a locking lever support bearing located in said one end section of said mounting plate, and said locking lever being pivotally secured to said locking lever support bearing for movement of said lever and said handle blocking means between locked and unlocked positions relative to said handle.

4,486,133

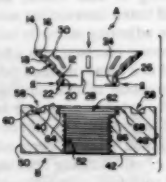
RETAINER FOR MECHANICAL FASTENER MEMBER

Donald L. Pletcher, Moraga, Calif., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Nov. 23, 1981, Ser. No. 323,732

Int. Cl.³ F16B *37/00, 37/04*

U.S. Cl. 411—84 **25 Claims**



1. A retaining device in combination with mechanical fastener member adapted to retain the fastener member in a located position in an apertured structural member, said retaining device comprising:

an open, generally frusto-conical retaining body having a side wall extending between a first smaller body end and a second larger body end, said second end being spaced a predetermined distance from and having a predetermined greater cross-sectional dimension than said first end; connecting means integral with said body adjacent said first end adapted to cooperate with the mechanical fastener retaining member at one face thereof for fixedly connecting said body to the fastener retaining member, said connecting means comprising a mounting bead extending circumferentially of said body and adapted to be selectively retainingly received in a groove disposed in one face of the mechanical fastener retaining member; and, said retaining body being constructed from a resilient material for allowing the said side wall to be selectively radially deformed while preventing effective axial expansion during use.

4,486,134

ADJUSTABLE CONNECTOR ASSEMBLY

Timothy T. White, P.O. Box 28181, San Jose, Calif. 95151

Filed May 17, 1982, Ser. No. 379,128

Int. Cl.³ F16B *25/00*

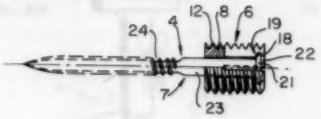
U.S. Cl. 411—103 **6 Claims**

1. An adjustable connector assembly for connecting and selectively adjusting the relative positions of two juxtaposed members secured to each other by the adjustable connector assembly comprising:

(a) a first connector element adapted to be secured to one of said two juxtaposed members;

(b) a second connector element including a first portion rotatably mounted in said first connector element and locked against axial displacement in relation thereto and a second portion adapted to be secured to the other of said two juxtaposed members, whereby rotation of said second connector element in one direction in relation to said first connector element effects relative movement of said two juxtaposed members away from each other while rotation of the second connector element in the opposite direction in relation to the first connector element effects relative movement of the two juxtaposed members toward each other;

(c) said first connector element comprising a tubular sleeve symmetrical about a longitudinal axis and having inner and outer peripheries, said outer periphery having screw threads adapted to engage one of said two juxtaposed members, said second portion of said second connector element having screw threads adapted to engage the other of said two juxtaposed members;



(d) said inner periphery of said tubular sleeve being provided with a radially extending circumferential slot, and said second connector element comprises an elongated body journaled for rotation in said first connector element and includes a head engaging said circumferential slot, whereby after assembly said second connector element is precluded from axial displacement in relation to said tubular sleeve; and

(e) said first connector element including an inner peripheral surface forming a journal bearing for the first portion of said second connector element, a relative larger diameter inner peripheral cylindrical surface next adjacent one end thereof, and a generally conical inner peripheral surface disposed adjacent said circumferential slot and constituting a bearing surface complimentary in configuration to the head of said second connector element.

4,486,135

TAPPING SCREW

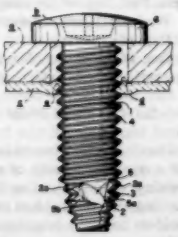
Hiroshi Kazino, Komaki, Japan, assignor to Kabushiki Kaisha Aoyama Seisakusho, Nagoya, Japan

Filed Jul. 7, 1982, Ser. No. 395,922

Claims priority, application Japan, Jul. 14, 1981, 56-104122[U]

Int. Cl.³ F16B *25/00*

U.S. Cl. 411—387 **3 Claims**



1. A tapping screw comprising:

a main shank portion of a substantially uniform diameter and

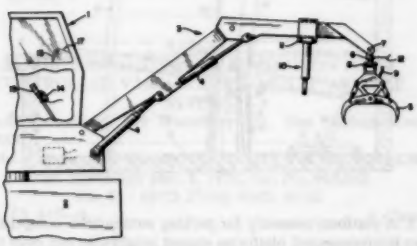
including a base end and a fore end;
a reduced diameter shank portion extending from the fore end of the main shank portion and including a base end and a tip end;
threads of a uniform pitch formed in both said main shank portion and said reduced diameter shank portion;
said reduced diameter shank portion having a substantially rounded triangular shaped cross-section defining apexes;
small recesses being formed between the apexes of said rounded triangle;
each of said small recesses being formed by a steep face facing the screwing direction and a gentle face oppositely facing the steep face;
each of said small recesses extending only in a region near the base end of the reduced diameter shank portion; and
a circumferential width of each recess being gradually increased toward said base end of the reduced diameter shank portion.

4,486,136

DEVICE FOR DETERMINING WEIGHT OF OBJECTS BEING MOVED

Edwin L. Howard, 3040 Fox Trail, Fultondale, Ala. 35068

Filed Sep. 14, 1982, Ser. No. 417,844
Int. Cl.³ G01G 7/00
U.S. Cl. 414—21 **9 Claims**



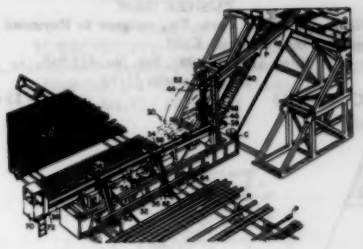
1. A loading device for engaging an object to be moved at two points on the object and determining its weight while lifting it comprising:
(a) a boom pivotally mounted on a base for horizontal and vertical movement;
(b) means operatively connected to said boom to cause said vertical movement;
(c) grapling means for grasping the load to be moved by said device at a point intermediate its ends;
(d) load cell means responsive to the weight of the load lifted by said device pivotally interposed between and interconnected with said grapling means and one end of said boom for measuring the weight of said load when lifted vertically by said device;
(e) means disposed on said boom intermediate of said grapling means and said base for engaging an end portion of said load engaged by said grapling means when said load is lifted; said engaging means being connected to said boom by load pin means for measuring the pressure exerted against said means during said lifting;
(f) respective load indicator means remotely connected to said load cell means and said load pin means to register respectively the downward force on the load cell means and the upward force on said load pin means during lifting; and means for determining the weight of load being lifted from the combination of said registered downward and upward forces.

4,486,137

PIPE PICKUP AND LAYDOWN MACHINE

James E. Buckner, Lafayette, La., assignor to Ingram Corporation, New Orleans, La.

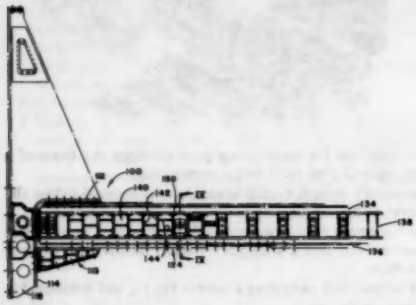
Filed Aug. 9, 1982, Ser. No. 406,627
Int. Cl.³ E21B 19/14
U.S. Cl. 414—22 **14 Claims**



1. A machine for transferring pipe between the floor of a drilling rig and pipe rack means comprising:
a stationary trough means adapted to be located below the level of the drilling rig floor,
said stationary trough means having a first end, an opposite second end and a stationary trough means pipe support surface,
said second end extending towards the rig and positionable close to the rig,
a support means positioned at said second end of said stationary trough means,
a movable trough means for receiving and supporting pipe having a lower end and an opposite upper end,
said movable trough means being aligned with said stationary trough means,
said lower end being coupled to said support means for generally vertical movement between a lower position and an upper position,
said lower position being next to and above said second end of said stationary trough means and said upper position being at a level above and spaced from said second end of said stationary trough means,
said upper end of said movable trough means being adapted to be supported by the floor of the rig,
a movable means supported for movement along the length of said stationary trough means for moving pipe lengthwise along said stationary trough means,
a lower end moving means operatively connected to said lower end of said movable trough means for moving said lower end between said lower and upper positions, and
an operator's cab attached to and supported by said first end of said stationary trough means,
said operator's cab including a platform having one end attached to said first end of said stationary trough means and an opposite end extending away from said first and second ends of said stationary trough means, said platform having a floor spaced below said stationary trough means pipe support surface,
said operator's cab including an operator's station positioned on said platform, a housing supported on said platform, and an attaching means for pivotally attaching said housing relative to said first end so that said housing can pivot between a first position upright and generally over said operator's station and a second position pivoted generally 90° from said first position towards said first end such that said housing rests on its side on said stationary trough means,
said operator's station including an upright control panel operatively connected to said movable means and to said first end moving means for controlling said movable means and said first end moving means and adapted and

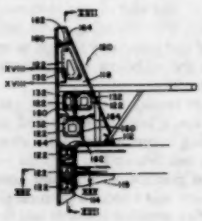
positioned to remain upright as said housing is pivoted between said first position and said second position, and said housing including a pair of spaced panels positioned to be adjacent and on opposite sides of said stationary trough means when said housing is in said second position.

4,486,138
PUSHER RAM
Jiri Hendrych, Bethel Park, Pa., assignor to Raymond Kaiser Engineers Inc., Oakland, Calif.
Filed Aug. 26, 1982, Ser. No. 411,965
Int. Cl.³ C10B *33/10*
U.S. Cl. 414—215 **13 Claims**



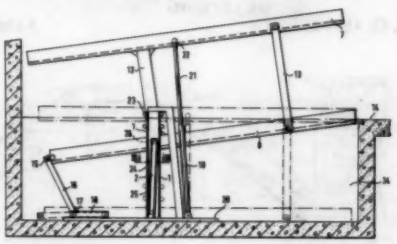
6. A pusher ram girder for coke ovens comprising:
horizontal structural beams vertically spaced and parallel, each beam including a plate member faced toward the space between the beams and extending lengthwise of the beams, webbing means secured to and extending between the plates of the beams, the webbing comprising;
plate-like web members disposed to extend laterally of the beams and spaced lengthwise of the same, with portions of the members being secured to the said plates;
bracing strut members extending lengthwise of the beams and having end portions secured to medial portions of the web members;
the web members and the bracing members serving to impart bending strength to the girder.

4,486,139
PUSHER RAM
Jiri Hendrych, Bethel Park, Pa., assignor to Raymond Kaiser Engineers Inc., Oakland, Calif.
Filed Aug. 26, 1982, Ser. No. 412,028
Int. Cl.³ C10B *33/10*
U.S. Cl. 414—215 **26 Claims**



1. A pusher ram for coke ovens and the like comprising,
an upstanding ram head having a ram face substantially spanning the width and height of said oven,
a horizontal ram girder affixed to the rear of said ram head and comprised of an elongated upper longitudinal beam member, an elongated lower longitudinal beam member and web means integrating said upper and lower beam members into a structural ram girder,
said ram head having an inverted L-shaped rear surface portion constructed and arranged so that the horizontal leg of said inverted L-shaped portion overlies adjacent horizontal portions of said girder and the vertical leg of said inverted L-shaped portion faces the adjacent end of said girder and extends to near the oven floor,
said ram head being affixed to said girder free of shims between said girder and said horizontal leg portion of said ram head and,
a replaceable ram head piece affixed to one of the upper and lower extremities of said ram head with sufficient interposed shims to obtain desired vertical clearance between said ram head piece and the oven chamber.

4,486,140
DEVICE FOR THE PARKING OF AUTOMOBILES
Kaspar Klaus, Dr. Berndl-Str. 5, D 8940 Memmingen, Fed. Rep. of Germany
Filed Oct. 27, 1982, Ser. No. 437,020
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143321
Int. Cl.³ E04H *6/06*
U.S. Cl. 414—229 **7 Claims**



1. A platform assembly for parking automobiles comprising two interconnected platforms spaced heightwise one over the other and means for lifting and tilting said platforms, said lifting and tilting means comprising trackways arranged at each of two sides of the platform assembly and having guide elements connected to the platforms, wherein two trackways of substantially rectilinear form are disposed upright at each side of the platform assembly at an acute angle to one another and wherein said trackways are disposed side-by-side with a small minimal spacing between them.

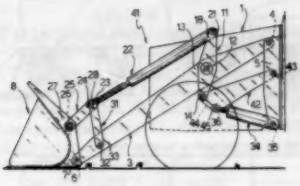
4,486,141
LINKAGE SYSTEM FOR A LOADER VEHICLE
Roberto D. Pescarmona, Turin, Italy, assignor to Fiat-Allis Europe S.p.A., Lecce, Italy
Filed Jun. 1, 1982, Ser. No. 383,592
Claims priority, application Italy, Jun. 9, 1981, 67793 A/81
Int. Cl.³ E02F *3/70*
U.S. Cl. 414—697 **3 Claims**

1. A linkage system for a loader vehicle comprising a pair of lift arms each having a first end pivotally connected to an upper portion of a bracket member secured to the frame of the vehicle and a second end pivotally connected to a lower portion of a bucket,
a pair of levers pivotally connected substantially intermediate their ends to said lift arms at corresponding locations on the lift arms near the pivotal connection between the first ends of the lift arms and the upper portions of the bracket members, said levers each having an upper end portion and a lower end portion extending generally up-

wardly and downwardly from its pivotal connection with a respective lift arm,

a pair of first links each having a first end pivotally connected to a corresponding lever lower end portion and having a second end pivotally connected to a corresponding bracket member substantially intermediate its ends,

a pair of control cylinders for controlling rotation of the bucket about its lower portion, each having a first end pivotally connected to a corresponding lever upper end portion and a second end pivotally connected to an upper portion of the bucket,



a pair of lifting cylinders of relatively reduced length, each having a first end pivotally connected to a corresponding bracket member lower end portion and having a second end pivotally connected to a corresponding first link, and

said first links each having a substantially triangular configuration such that its first end has a first and second vertex respectively pivotally connected to said lower end of one of the levers and to said second end of one of said lifting cylinders.

4,486,142

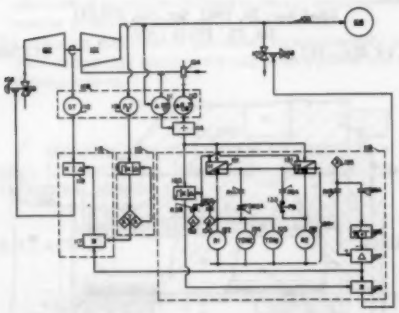
METHOD OF AUTOMATIC LIMITATION FOR A CONTROLLED VARIABLE IN A MULTIVARIABLE SYSTEM

Naum Staroselsky, 534 Waterbury Cir., Des Moines, Iowa 50309

Division of Ser. No. 856,302, Dec. 1, 1977, Pat. No. 4,142,838. This application Dec. 1, 1978, Ser. No. 965,562

Int. Cl.³ F04D *27/02*; **F04B** *49/02*

U.S. Cl. 415—1 **1 Claim**



1. A method of an automatic limitation for one controlled variable of a multivariable controlled object having a control means with a set point and a closed loop providing for said limitation, said method comprising:

controlling the position of said control means by use of said closed control loop after said controlled variable reaches a level which is necessary to limit until there is a preestablished deviation of said controlled variable from said limited level;

upon sensing of said preestablished deviation of said controlled variable from said limited level, adjustably changing the set point of said control means in one direction as quickly as possible to decrease said deviation and then immediately after said changing of the set point, exponentially changing said set point in an opposite direction; and

controlling a required position of said control means by said closed control loop after said controlled variable reaches said limited level again as a result of said exponential changing of the set point of said control means.

4,486,143

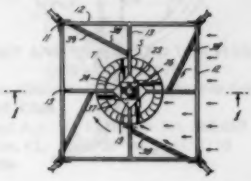
TURBINE-TYPE WIND MACHINE

Paul W. McVey, 4039 Grennoch La., Houston, Tex. 77025

Filed Sep. 1, 1982, Ser. No. 413,667

Int. Cl.³ F03D *3/04*

U.S. Cl. 415—2 R **7 Claims**



1. A wind machine comprising.

a vertically extending support structure formed of an open framework through which the wind can freely pass,

a vertical shaft disposed centrally of said structure,

a turbine assembly mounted upon the support structure and exposed to the wind, which may blow through the framework, said turbine assembly including

(a) a rotatable turbine unit having driving vanes, and

(b) a plurality of deflector panels spaced peripherally about the turbine unit, with each panel being disposed at a generally tangential angle with respect to the periphery of the turbine unit and its driving vanes and extending from the outer limits of the support structure to a point adjacent to the periphery of the turbine,

each panel when in the path of the wind direction acting to direct the wind which strikes the panels to deflect, channel and concentrate the wind flow to selected driving vanes of said unit and thereby impart rotation to the unit,

means mounting each panel for individual angular adjustment with respect to the vanes of the turbine,

additional means for mounting each panel for individual independent movement between the inner vertical edge of each panel and the periphery of the turbine unit to thereby control the wind flow passing between the said inner vertical edge of the panel and the periphery of the turbine unit,

means connecting the turbine unit to said vertical shaft which extends within the support structure, and

apparatus located at the lower end of the support structure and having connection with the vertical shaft, whereby said apparatus is driven by said shaft which is rotated by the turbine unit.

4,486,144

ROTATING WIND-GUIDING SHELL FOR THE FAN

Fa C. Hung, No. 137, Nan-Hua Village, Chi-An Heiang, Hua-Lien Hsien, Taiwan (953)

Filed Apr. 20, 1982, Ser. No. 370,164

Int. Cl.³ F04D *29/70*; **F01D** *25/24*

U.S. Cl. 415—121 G **6 Claims**

1. An electric fan apparatus comprising:

a stand,

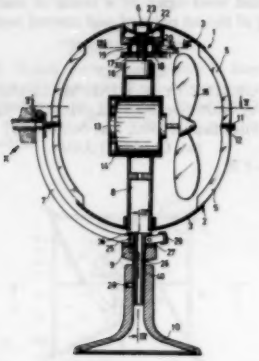
a fan motor and blade,

support means for mounting said fan motor adjustably on said stand,

a substantially spherically shaped air directing shell,

means for rotatably mounting said shell on said fan motor support means with said fan motor and blade within said shell, and

a plurality of air guiding faces circumferentially spaced in



the surface of said shell, each face comprising an opening through said shell and a plurality of air directing vanes in said opening, at least one of said vanes most centrally located in said opening extending substantially radially with respect to said shell.

4,486,145

FLUID MACHINE

Charles L. Eldredge, and John T. Eldredge, both of Box 207, Fessenden, N. Dak. 58438

Filed Feb. 3, 1982, Ser. No. 345,471

Int. Cl.³ F03D 5/06

U.S. Cl. 416—82 **10 Claims**

4. An apparatus for converting fluid movement into a useful force comprising:

(a) a device comprising:

(1) a pivotally mounted first plate comprising a first pivotally mounted portion for first contacting a moving fluid and a second portion immediately adjacent and attached to said first portion for secondly contacting said moving fluid, and

(2) a second plate hingedly connected to said second portion of first plate at the end of said first plate opposite to that which is pivotally mounted, said second plate without contact with a stop causing said first plate to move when fluid moves past said first plate and then past said second plate, and

(b) means cooperating with said first plate for converting said movement of said first plate into a useful force.

4,486,146

AIRCRAFT PROPULSION MEANS

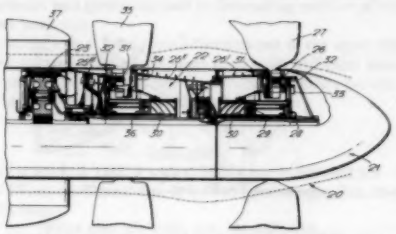
Brian S. Campion, Weybridge, England, assignor to British Aerospace Public Limited Company, London, England

Filed Aug. 3, 1981, Ser. No. 289,734

Claims priority, application United Kingdom, Aug. 8, 1980, 8025954

Int. Cl.³ B64C 11/48

U.S. Cl. 416—129 **9 Claims**



1. An aircraft adapted to cruise at high subsonic speeds including propulsion means mounted thereon, said propulsion means including a propeller fan having at least 10 blades wherein the ratio of the total blade area to the area swept by the blades is at least 0.8 and which operates in the cruise condition at disc loading of at least 30 lb/ft^2 and consequently imparts to its slipstream a component of swirl of at least 10° in a given sense, and a multibladed stator arranged with respect to said propeller fan to impart a considerable component of swirl in the opposite sense so that the total swirl imparted to the slipstream is nil or relatively low, whereby the diameter of the propeller fan may be relatively low whilst maintaining a relatively high propulsive efficiency and thrust.

4,486,147

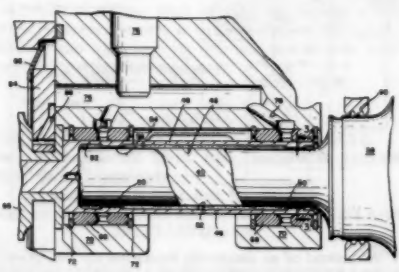
TURBOCHARGER AND ROTOR SHAFT ASSEMBLY

Joe L. Byrne, Torrance, and Hans Egli, Santa Monica, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 20, 1982, Ser. No. 370,011

Int. Cl.³ F01D 1/02

U.S. Cl. 416—213 R **11 Claims**



1. A rotor shaft assembly of the type used in a turbocharger for rotating about its axis to drive a compressor and supply compressed air to an internal combustion engine comprising:

a metal shaft having a compressor impeller mounted at one end thereof and defining a coaxial bore extending into the shaft at the other end thereof, said shaft including at least one generally annular land projecting radially inward from said shaft into the coaxial bore and having an axial length less than that of the bore with recessed areas in

flanking relationship to said at least one land, said at least one land including at least one axially oriented relief groove therethrough.

a ceramic turbine rotor including a generally cylindrical stub shaft coaxially located by and in contact with said at least one land, thereby defining an annular space between said stub shaft and said metal shaft, and

a high temperature adhesive in said annular space for securing said stub shaft to said metal shaft in a torque transmitting relationship.

4,486,148

METHOD OF CONTROLLING A MOTIVE POWER AND FLUID DRIVING SYSTEM

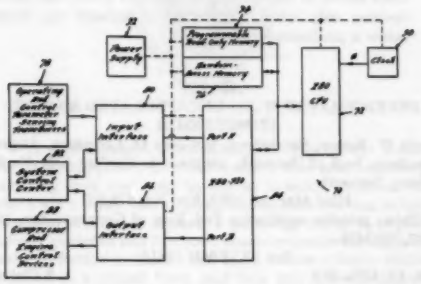
Husam Battah, Troy, Mich., assignor to Michigan Consolidated Gas Company, Detroit, Mich.

Continuation-in-part of Ser. No. 88,785, Oct. 29, 1979, Pat. No. 4,330,237. This application May 17, 1982, Ser. No. 379,021

The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.

Int. Cl.³ F04B *41/06, 49/00*

U.S. Cl. 417—2 **21 Claims**



1. A method of controlling a motive power and fluid driving system, comprising the steps of:

(a) sensing a plurality of operating parameters and at least one control parameter defining an energy quotient for said motive power and fluid driving system; and

(b) adjusting said control parameter to substantially maximize said energy quotient for said motive power and fluid driving system.

4,486,149

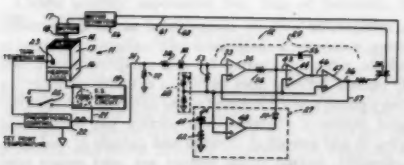
HEATED LIQUID SYSTEM INTERLOCK

Stephen L. Merkel, Bay Village, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Mar. 11, 1983, Ser. No. 472,322

Int. Cl.³ F04B *49/10*; B67D *5/08*

U.S. Cl. 417—32 **16 Claims**



1. A system for acting upon a heated liquid when the liquid has reached a desired condition comprising:

a container for the liquid;

a heater adjacent the container operable, when activated, to heat the container and the liquid therein;

a temperature sensor at the container for sensing the temperature of the container;

control means coupled to the temperature sensor for intermittently activating the heater when the container temperature is near a set point temperature indicative of a desired heated condition of the liquid, the control means producing at an output an intermittent electrical signal when the heater is intermittently activated;

means for intergrating the output of the control means;

means responsive to the condition of the integrating means to produce an interlock release signal;

a motor-driven pump for acting upon the liquid when the motor-driven pump is energized; and

means, responsive to the interlock release signal, for energizing the motor-driven pump.

4,486,150

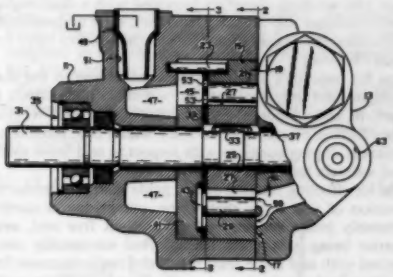
ROTARY PUMP AND IMPROVED DISCHARGE PORT ARRANGEMENT

Michael D. Davis, Coldwater, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 15, 1982, Ser. No. 368,490

Int. Cl.³ F04B *23/10*; F01C *1/10*

U.S. Cl. 417—204 **9 Claims**



1. In a rotary pump of the type including housing means defining a pumping chamber, a pumping element rotatably disposed in the pumping chamber and defining expanding and contracting fluid chambers, the housing means defining a fluid inlet port in communication with the expanding fluid chambers, and a fluid output port in communication with the contracting fluid chambers, the pumping element including a rotor member mounted for rotation with an input shaft, the rotor member having a plurality of slots, each of the slots receiving a radially displaceable vane member, the vane member being configured such that radial movement thereof changes the volume of the adjacent fluid chamber, the pumping chamber being defined by a continous arcuate wall surface including an inlet arc surface of progressively increasing radius in the direction of rotation of the rotor member, and a discharge arc surface of progressively decreasing radius, each vane member being a leading vane member as it progresses across the discharge arc surface, and cooperating with a trailing vane member and the discharge arc surface to define the contracting fluid chamber, the volume of the contracting fluid chamber simultaneously being increased by radially inward displacement of the leading vane member and being decreased by the progressively decreasing radius of the discharge arc surface, and the housing means defining a discharge port disposed to permit fluid communication between the contracting fluid chamber and the fluid outlet port, characterized by:

the discharge port being located, relative to the discharge arc surface, to begin communication with the contracting fluid chamber at the point at which the decrease in the volume of the contracting fluid chamber caused by the decreasing radius of the discharge arc surface from its

maximum radius approximately equals the increase in the volume of the contracting fluid chamber caused by the radially inward movement of the leading vane member.

4,486,151

DIAPHRAGM PUMP

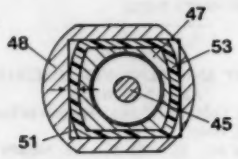
Veikko Korhonen-Wesala, Box 217, S-450 60 Färgelanda, Sweden

Filed May 11, 1982, Ser. No. 377,173

Claims priority, application Sweden, May 13, 1981, 8103002

Int. Cl.³ F04B *1/06, 17/00, 39/10*

U.S. Cl. 417—222 **16 Claims**



1. A diaphragm pump comprising:

a drive shaft having a rotor;

a least two working chambers provided with a diaphragm;

an inlet chamber and an outlet chamber, each communicating with said working chambers via a non-return valve for each chamber;

means for imparting to a reciprocal movement to the diaphragm, said means comprising a wobble plate which is fixed to and supported by said diaphragm, said wobble plate having a central guide shaft which is adjustable to different sloping positions with respect to said drive shaft, and wherein said guide shaft has a free end;

means for effecting rotation of said guide shaft in response to rotation of said drive shaft rotor, comprising: a carrier rotatably journalled on said guide shaft free end, said carrier being axially displaceable but unrotatably connected with said drive shaft rotor; and resilient means for holding said carrier in a preset eccentric position with respect to said drive shaft so that under overload conditions said carrier will press directly against said resilient means and reduce the eccentricity of said carrier with respect to said drive shaft; and

wherein said resilient means comprises a pair of rubber blocks disposed in association with opposite ends of said carrier.

4,486,152

PUMP WITH SPRING LOADED VALVE

Louis-Claude Porel, Rambervillers, France, assignor to Hydro Rene Leduc, France

Filed Nov. 21, 1980, Ser. No. 209,220

Claims priority, application France, Nov. 26, 1979, 79 29037; Apr. 30, 1980, 80 09780

Int. Cl.³ F04B *49/02, 39/08*

U.S. Cl. 417—270 **8 Claims**

1. A hydraulic pump comprising:

at least one moveable piston means;

means for moving said piston means;

suction valve means in communication with said piston for permitting flow of hydraulic fluid into said pump during a suction phase of said piston movement;

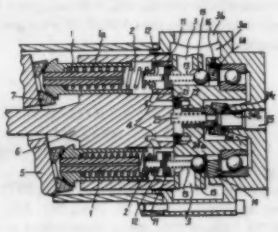
delivery valve means in communication with each of said piston means, for permitting the flow of hydraulic fluid out of said pump during a compression phase of said piston movement;

first spring coupled to said suction valve for providing a first substantially constant force urging said suction valve closed;

a moveable cam;

shaft means coupled to said piston moving means and coupled to said cam for moving said cam in synchronism with the cycle of said pump;

second spring bearing against said cam and opposing said first spring coupled to said suction valve for providing in a direction opposite to said first force a counterforce from



said second spring varying in synchronism with said pump cycle, said counterforce being smaller than said first force during said pump delivery phase and higher than said first force during at least part of said suction phase, said valve opening only when pump residual pressure has fallen below a predetermined value.

4,486,153

REFRIGERATOR WITH ENCAPSULATED MOTOR COMPRESSOR

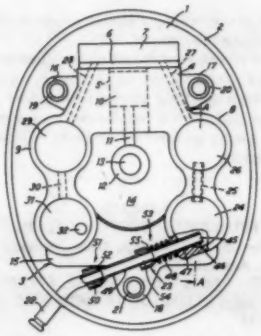
Bendt W. Romer, Sonderborg, and Jens O. Lorentzen, Augustenborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Mar. 24, 1983, Ser. No. 478,337

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1982, 3213476

Int. Cl.³ F04B *39/12*

U.S. Cl. 417—313 **9 Claims**



1. A refrigerator with an encapsulated motor compressor, comprising, a capsule, a compressor unit resiliently mounted in said capsule, a housing casting for said compressor unit, said housing casting defining (and having) a cylinder chamber for receiving a piston and a combined sound damping and centrifugal liquid separator chamber, first suction gas inlet means connected to and extending through said capsule to said combined chamber, second (said) suction gas inlet means connected to said housing casting and having fluid communication with (including a suction gas inlet connection for) said combined chamber, (and a suction gas inlet connector for said capsule,) said first and second suction gas inlet means having fluid communication and being relatively moveable to each other, said combined chamber having a rotationally symmetri-

cal separator face with a vertical axis for operation as a liquid separator, a tangential inlet passage between said second suction gas inlet means (connection) and the top of said separator face, central gas outlet means adjacent the top of said separator face and a central liquid outlet aperture at the bottom of said separator face.

4,486,154

FUEL INJECTION PUMP

Gérard Duplat, Bron, and Jean Leblanc, Lyons, both of France, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 29, 1982, Ser. No. 403,198

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135045; Nov. 25, 1981, 3146625

Int. Cl.³ F04B *19/22*

U.S. Cl. 417—487 **10 Claims**

1. A fuel injection pump having a housing and rotating distributor supported in a sleeve and a first bore including a cam ring, said cam ring having an inwardly directed cam which via a roller and a spring-loaded push rod and relative rotational movement imparts a pumping stroke to a piston radially guided in said first bore, characterized in that each said push rod further includes a base and a hollow cylinder slidably disposed in a second bore, said base and cylinder disposed coaxially relative to said second bore, said second bore arranged to guide said piston, said base further including means for positional fixation of said roller, a spring plate means fastened to said piston, a spring disposed inside said push rod arranged to press said piston radially outwardly via a spring plate, and said sleeve is provided with openings connecting said second bore with an axial face of said sleeve and being adapted to receive prong means, said prong means being supported by a fastening ring connected to said sleeve and further that said prong means extend into guiding means at said cylinder of said push rod.

4,486,155

CONTROL OF THE PISTONS IN INJECTION PUMPS OF INTERNAL-COMBUSTION ENGINES

Manuel Roca-Nierga, Barcelona, Spain, assignor to Spica S.p.A., Italy

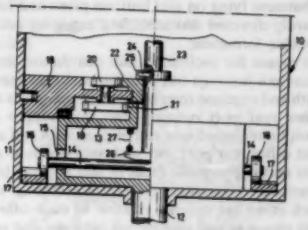
Filed Jun. 2, 1982, Ser. No. 384,209

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122703

Int. Cl.³ F04B *9/04*

U.S. Cl. 417—500 **36 Claims**

1. A fuel distributor injection pump comprising a pumping and distribution piston arranged coaxially with a drive input shaft of the pump and also coaxially with the axis of rotation of face-cam complementary members with which the pump is provided, said piston having a reciprocal axis pumping motion and a rotary motion for distribution of the fuel to the different cylinders of an engine, said drive input shaft being connected to said complementary face-cam members for the purpose of imparting a reciprocal rotating movement to them, said face-cam members controlling said piston to move axially, said fuel distributor injection pump being characterized by the fact that one of the said complementary face-cam members is kinematically connected to said piston by at least one cluster of gears to cause it to rotate with angular velocity less than the reciprocal velocity between the cam members, and the angular translation



velocity of the axis of said at least one cluster of gears being not greater than the angular rotation velocity of said pumping and distributing piston.

4,486,156

CONCRETE PUMP WITH BUTTRESSED DISTRIBUTION PIPE

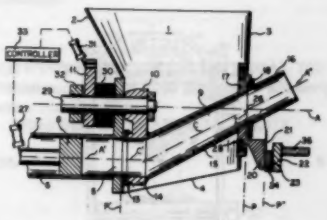
Herbert Feger, Ettlingen; Rolf Griesbach, Dortmund, and Franz-Hubert Geue, Sundern, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Walter Scheele GmbH & Co. KG, Unna-Massen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 386,259, Jun. 8, 1982, abandoned. This application Sep. 29, 1982, Ser. No. 427,180

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1981, 3122825

Int. Cl.³ F04B *15/02*

U.S. Cl. 417—517 **8 Claims**



1. A pump assembly for moving a viscous mass, said assembly comprising:

a hopper adapted to hold said mass and having a front wall formed with a front port centered on a front axis perpendicular to said front wall at said front port and a rear wall formed with two rear ports centered on respective rear axes perpendicular to said rear wall at said rear ports and generally parallel to said front axis, sad front and rear ports opening at respective parallel front and rear planes substantially perpendicular to said axes;

respective piston pumps secured to said rear wall outside said hopper over said rear ports and operable to draw portions of said mass out of said hopper and expel said drawn-out portions back into said hopper through the respective rear ports;

an outlet conduit connected to said front wall outside said hopper over said front port;

a distributor pipe in said hopper having a front end fitted and aligned with said front port and a rear end engageable over and alignable with either of said rear ports, said distributor pipe being limitedly axially displaceable in said hopper;

a buttress formation integrally formed on said distributor

pipe below said front end, projecting forward through said front wall of said hopper, and having outside said hopper a forwardly directed abutment face defining outside said hopper a buttress plane parallel to said front and rear planes;

an abutment lying on said buttress plane and having a backwardly directed abutment face engaging said face of said buttress formation;

drive means for oscillating said distributor pipe about said front axis between one position with said rear end aligned with and engaged over one of said rear ports and with said other rear port opening into said hopper and another position with said rear end aligned with and engaged over said other rear port and with said one rear port opening into said hopper, said faces of said buttress formation and abutment remaining in force-transmitting contact with each other but moving relative to each other parallel to said planes as said pipe moves between said positions, said faces axially engaging one another at a location axially aligned with the rear axis of the rear port said rear end is engaged over; and

biasing means including axially extending tension elements outside said hopper and having rear element ends anchored in said rear wall and front element ends anchored in said abutment for urging said pipe axially backward and thereby pressing said rear end against said rear wall.

4,486,157

RECIPROCATING COMPRESSOR

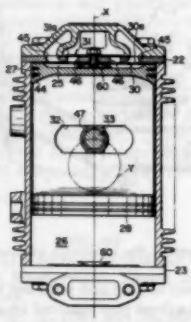
Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 14, 1982, Ser. No. 449,738

Claims priority, application Japan, Dec. 16, 1981, 56-203149; Feb. 22, 1982, 57-27232

Int. Cl.³ F04B *39/10*; F01B *9/00*

U.S. Cl. 417—534 **9 Claims**



1. A reciprocating compressor comprising:

a cylinder housing;

a drive shaft rotatably mounted in said housing;

a piston body reciprocally movably disposed within said cylinder housing and having first and second pistons which are coaxially aligned with each other, and a connecting section interconnecting said first and second pistons, said first and second pistons respectively defining first and second cylinder chambers within said cylindrical housing;

intake the discharge valves disposed in operative connection with each cylinder chamber and respectively adapted to allow therethrough a fluid to be sucked into and to be discharged out of the cylinder chamber;

means for changing rotary motion of said drive shaft into reciprocating motion of said piston body said changing means including means defining an elongate hole in a middle section of said piston body connecting section, said elongate hole extending in a direction perpendicular to the axis of said pistons, and a piston pin movably disposed within said elongate hole and connected to said drive shaft, said piston pin being adapted to follow a circular path in accordance with the rotary motion of said drive shaft; and

a bushing rotatably mounted on said piston pin and slidably engaged with said elongate hole, said bushing including a generally annular section which is slidable on an inner wall surface of said elongate hole and formed with a cylindrical opening within which said piston pin is rotatably disposed, and an annular flange section integral and coaxial with said annular section, said flange section being located between a surface of said piston body connecting section and a face of an end section of said drive shaft to which end section said piston pin is integrally connected, said bushing annular section being formed with two flat surfaces which are parallel with each other, said two flat surfaces being in slidable contact with two straight elongated inner wall surfaces, respectively, of said elongate hole, said two straight elongated inner wall surfaces being parallel with each other and extending in a direction perpendicular to the axis of said pistons.

4,486,158

ROTARY VANE COMPRESSOR WITH SUCTION PORT ADJUSTMENT

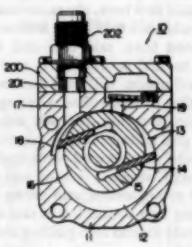
Teruo Maruyama, Neyagawa; Shinya Yamauchi, Katano, and Nobuo Kagoroku, Otsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 29, 1982, Ser. No. 343,862

Claims priority, application Japan, Jan. 29, 1981, 56-12426

Int. Cl.³ F04C *18/00, 29/08*

U.S. Cl. 418—39 **2 Claims**



1. In a sliding vane type compressor, in which a refrigerating capacity during high speed operation is suppressed by a suction loss produced when refrigerant pressure in a vane chamber becomes lower than the pressure of a refrigerant supply source in the suction stroke, and including a rotor haing vanes slidably mounted thereon, a cylinder accommodating said rotor and said vanes, side plates secured to both sides of said cylinder for sidewise closing both open ends of vane chambers defined by said vanes, rotor and said cylinder, and suction and discharge ports respectively communicating with suction and discharge passages and for providing communication between said vane chambers to the outside of said compressor, said suction passage leading from an evaporator to a said vane chamber, the top of said cylinder being positioned at a location where said rotor and cylinder are closest to each other, the improvement in which a spacer provided with an aperture for determining an effective area of said suction passage and for adjusting a self-suppressing action of a compressor refrigerating capacity is mounted near said suction port in said suction passage in such a manner as to meet a condition of $0.025 < \theta_v \bar{a}/\text{Vo} < 0.080$, where the parameter $\bar{a}$ is determined by the following equation:

$$\bar{a} = \int_0^{\theta_2} \theta^2 a(\theta)\, d\theta / \int_0^{\theta_2} \theta^2\, d\theta$$

where θ represents an angle (rad) formmed between the top of said cylinder and the end of said vane closer to said cylinder around the center of rotation of said rotor, Vo (cc) represents the volume of said vane chamber when said angle θ is θ_2 radian which is determined by the position of said vane at the end of the suction stroke and $a(\theta)$ (cm^2) represents the effective area of the suction passage leading from said evaporator to a said vane chamber as determined by said spacer.

4,486,159

ROTOR FOR A ROTARY ENGINE

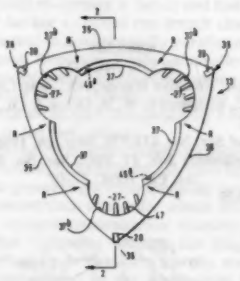
David W. Garside, Solihull, England, assignor to Norton Motors (1978) Limited, Staffordshire, England

Continuation of Ser. No. 378,436, May 17, 1982, abandoned. This application May 11, 1984, Ser. No. 608,923

Claims priority, application United Kingdom, Jun. 20, 1981, 8119075

Int. Cl.³ F01C *1/22, 21/06*

U.S. Cl. 418—61 A 10 Claims



1. An air cooled rotor in a rotary internal combustion engine of the kind comprising a cavity, means for mounting the rotor in the cavity for rotation, the walls of the cavity being shaped to provide walls of working chambers formed by the rotating rotor, the working chambers varying in volume as the rotor rotates, the engine having inlet and outlet ports to the cavity, the rotor comprising a body having, in a plane transverse to the axis of rotation of the rotor, an outer profile of generally equilateral triangular shape with outwardly curved sides and an inner profile providing part peripheral location portions in the regions of the mid point of the rotor sides, an insert in engagement with the part peripheral location portions, the insert providing a bearing part and an indexing gear of the rotor, the inner profile of the body adjacent each apex of the rotor, being radially outwards of the insert over the entire axial length of the body, thereby providing gaps between the location portions to provide axial cooling passages, peripherally bounded by the rotor body and the insert, which extend continuously over the entire axial length of the body, and the engine having means to pass cooling air axially through said axial cooling passages from one end of the body to the other end thereof.

4,486,160

PUMPS AND MOTORS

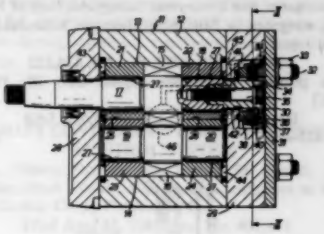
Brian R. Lipscombe, Frome, England, assignor to Dowty Hydraulic Units Limited, England

Filed Jun. 29, 1982, Ser. No. 393,419

Claims priority, application United Kingdom, Jul. 18, 1981, 8122253

Int. Cl.³ F01C *1/18*

U.S. Cl. 418—205 11 Claims



1. A pump or motor comprising a casing, which houses at least one rotary member and which has an inlet port and an outlet port, cam means connected to be rotated by said member and a fluid displacement device which is driven by said cam means when rotating and which includes at least one reciprocable element which, upon rotation of said rotary member through each revolution, so repeatedly projects into a chamber in said casing which is in communication with one of said ports as to effect a series of momentary decreases in the effective volume of that chamber and which is so repeatedly retracted from that chamber as to effect a series of momentary increases in the effective volume of said chamber thereby to cause momentary flow of fluid repeatedly to occur out from, and back into, said chamber.

4,486,161

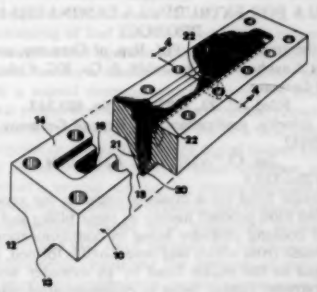
MELT-BLOWING DIE TIP WITH INTEGRAL TIE BARS

David L. Middleton, Roswell, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 12, 1983, Ser. No. 494,073

Int. Cl.³ B29F *3/04*

U.S. Cl. 425—7 5 Claims



1. In a melt blowing die tip having a generally triangular nose portion with a knife-edge forming the extremity of the die tip:

a channel extending lengthwise of the die tip;

a row of small openings extending from said channel to the knife-edge extremity of the die tip; and

a plurality off tie bars integral with the die tip and bridging said channel, said tie bars being integral with opposite

sides of said channel in said die tip and bridging said channel to strengthen the die tip to withstand the internal outwardly directed pressure exerted by the molten polymer forced into said channel and flowing to be extruded through the die openings.

4,486,162

BLADDER HANDLING APPARATUS FOR A TIRE VULCANIZING MACHINE

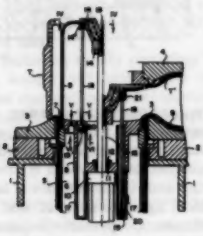
Akira Hasegawa, and Katsuyoshi Sakaguchi, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1982, Ser. No. 434,322

Claims priority, application Japan, Oct. 29, 1981, 56-160231[U]

Int. Cl.³ B29C *1/12*; B29H *5/06, 5/08*

U.S. Cl. 425—48 **3 Claims**



1. A bladder handling apparatus for a tire-vulcanizing machine comprising in combination a center post vertically penetrating a center of a lower bladder holding unit, an upper bladder holding unit attached to an upper end of said center post, a fluid-pressure actuator serving to move said center post up and down, thereby raising and lowering said upper bladder holding unit, at least one spacer rod extending from said upper bladder holding unit having a lower threaded end inserted in said lower bladder holding unit and a nut-stopper combination fitted onto said lower threaded end of said at least one rod engageable with said lower bladder holding unit, thereby controlling the limit of elevation of said upper bladder holding unit.

4,486,163

NOZZLE FOR EXTRUDING A LAMINATED FOOD PRODUCT

Hans Pfeilstetter, Ampfing, Fed. Rep. of Germany, assignor to Convent Knabber-Geback GmbH & Co. KG, Cologne, Fed. Rep. of Germany

Filed Jul. 23, 1982, Ser. No. 401,343

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1981, 3129947

Int. Cl.³ A23P *1/00*; A21C *3/04*

U.S. Cl. 425—133.1 **5 Claims**

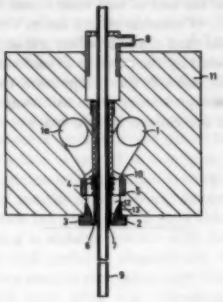
4. A nozzle head for a cooking extruder for producing a center-filled food product having an inner filling and an outer shell, said cooking extruder being in communication with a source of melt from which said outer shell is formed, said melt being urged to the nozzle head by an extruder worm, said cooking extruder further being in communication with a vacuum means, said nozzle head including:

an extruder nozzle having an axis which extends perpendicular to the axis of the extruder worm;

a filling tube extending through the extruder nozzle;

a mandrel surrounding said filling tube such that an annular space is defined between said mandrel and said filling tube, said annular space being in communication with said vacuum means; and

passages for first and second streams in communication with the source of melt and the extruder nozzle, said passages for first and second streams extending through a deflection of 90° intermediate the source of melt and the nozzle, said passages for first and second streams joining intermediate the 90° deflection and the nozzle so as to distribute the pressure of the melt uniformly around the mandrel and



to provide a continuous mass of the melt around the mandrel,

and means for eliminating flow seams intermediate the extruder nozzle and the point where said passages for first and second streams join.

4,486,164

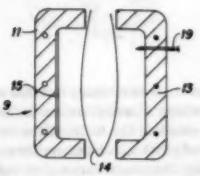
BLOW MOLD

Robert R. Wilkie, Roanoke Rapids, N.C., and Charles S. Cook, Mauldin, S.C., assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Continuation of Ser. No. 133,778, Mar. 26, 1980, abandoned. This application Jun. 17, 1982, Ser. No. 433,770

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—525 **6 Claims**



1. A blow mold adapted to mold a parison within a cavity to form a single-walled container having an integral hinge connecting sections of said container comprising:

first and second mold sections adapted to mate along a parting line said mold sections adapted to define said cavity when mated;

means adapated to inflate said parison within said cavity;

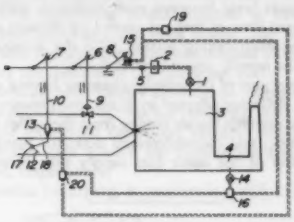
a hinge forming area located on a cavity defining mold wall, coincidental with said parting line and adapted, upon inflation of said parison within said cavity, to reduce the thickness of said parison within said hinge forming area relative to adjacent areas of said parison; and

wherein said hinge forming area comprises an indentation having a depth of draw and a suspended width and said depth of draw is greater than said suspended width.

4,486,165
COMBUSTION CONTROL APPARATUS OF A COMBUSTION FURNACE

Jun Usami, Gamagori, and Hiroshi Yamada, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed May 5, 1982, Ser. No. 375,304
Claims priority, application Japan, May 13, 1981, 56-71946
Int. Cl.³ F23N 5/00
U.S. Cl. 431—76 4 Claims



1. A combustion control apparatus for controlling fuel and air amounts entering a combustion furnace, comprising:

a first load detector means for detecting a load on the combustion furnace and generating an output corresponding to the detected load;

master controller means for receiving the output of the first load detector means, the master controller means being actuated in an amount corresponding to the output received from the first load detector means;

linkage means connected to the master controller, for transmitting the actuation of the master controller to a fuel damper and an air damper, respectively, thereby controlling the amount of opening in the air and fuel dampers, the air damper having a control rod length changing device being connected in a substantially parallel manner to the linkage means from the master controller, the length changing device being capable of elongating and contracting the linkage means, thereby controlling the amount of opening in the air damper, independently from the amount of opening in the fuel damper;

oxygen concentration detector means for detecting an oxygen concentration in an exhaust gas from the combustion furnace and generating a corresponding output;

an oxygen concentration controller which receives the output of the oxygen concentration detector, the oxygen concentration controller causing the length changing device to elongate or contract, thereby maintaining the oxygen concentration in the combustion furnace at a standard value;

a furnace load ratio change detector connected to a second load detector means, the furnace load ratio change detector generating an output when the output of the second load detector means exceeds a predetermined value;

a length setting regulator electrically connected to the furnace load ratio change detector, the length setting regulator receiving the output from the furnace load ratio change detector and causing the output from the oxygen concentration controller to be non-controlling as an input for the length changing device, the length changing device being controlled exclusively by the output from the furnace load ratio change detector, thereby causing the length changing device to change the length of the linkage means for the air damper to a predetermined length, the length changing device being subsequently controlled by the output from the oxygen concentration controller after the length changing device has caused the air damper linkage to achieve a predetermined length;

wherein the length changing device comprises;

an outer protective casing for protecting all elements of the length changing device contained therein, the outer casing having an inner surface and an outer surface;

a reversible electric motor attached to the inner surface of the outer protective casing, the reversible electric motor being controlled by the output of the length setting regulator;

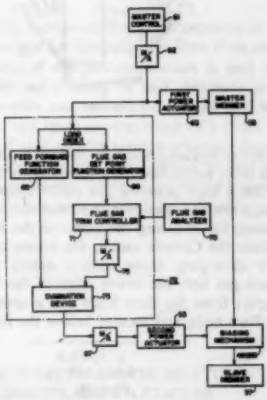
gear means, mounted within the outer protective casing, for transmitting the motion of the electric motor to the air damper linkage;

sensing means for detecting the elongation or contraction of the air damper linkage, the sensing means being connected with said gear means; and means for delivering a feedback signal from said sensing means to said length setting regulator for controlling the length of the length changing device during stationary combustion under a small load change.

4,486,166
JACKSHAFT CONTROLLED BOILER COMBUSTION CONTROL SYSTEM

Robert L. Nelson, Orrville, and Donald M. Stough, Jackson Township, Stark County, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 12, 1982, Ser. No. 407,677
Int. Cl.³ F23N 5/00
U.S. Cl. 431—76 6 Claims



1. An improved combustion control system for a combustion apparatus supplied with first and second reagents, one of said reagents consisting of fuel and the other of said reagents consisting of a combustive agent including oxygen, said combustion apparatus having a master firing rate demand means responsive to a sensed demand which provides a load index signal output proportional to the sensed demand requirements; a master member movably mounted about a first axis; a first actuator responsive to said load index signal output for effecting master member movement; a slave member movably mounted about a second axis having means associated therewith for regulating the amount of one of said reagents supplied; and an intermediate linkage strut connected between said master member and said slave member for establishing a master-slave relationship regulating the amounts of regents supplied, said improved combustion control system comprising:

an intermediate linkage biasing mechanism operably associated with said intermediate linkage strut for effecting the modification of said master-slave relationship;

means for generating a position control signal, said position control signal generating means producing a predetermined control signal which is a function of the load index signal output; and

second actuator means responsive to said positioning control signal and operatively associated with said linkage biasing mechanism for effecting the operation thereof, whereby

said master-slave relationship is modified prior to the combustion process so that the amount of reagent supplied to said combustion apparatus by said slave member is a function of said master slave relationship as modified by said linkage biasing mechanism.

4,486,167

FLARE HAVING NOISE ATTENUATION

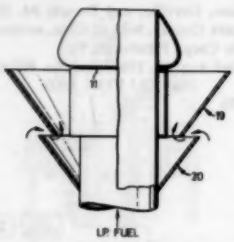
Robert McMurray, Ashford, and Gerald Pratley, Hampton, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Dec. 1, 1981, Ser. No. 326,287

Claims priority, application United Kingdom, Dec. 10, 1980, 8039568

Int. Cl.³ F23D *21/00*

U.S. Cl. 431—114 **13 Claims**



1. A flare comprising a supply line for a pressurized gas and a Coanda body positioned over the outlet of the supply line so as to define a high pressure gas outlet adapted to direct the issuing high pressure gas over the outer surface of the Coanda body, means for reducing the noise of the high pressure gas issuing from the Coanda outlet, the means comprising a first upwardly diverging frusto-conical shield surrounding the pressurized gas line, the lower edge of the first shield being spaced apart from the flare body and a second shield closed with the flare body and located below the first shield.

4,486,168

FLARE

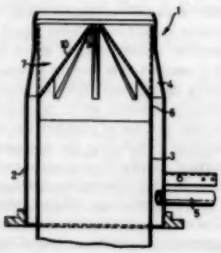
Gerald Pratley, Hampton, England, assignor to The British Petroleum Company p.l.c., London, England

Filed Jun. 15, 1982, Ser. No. 388,685

Claims priority, application United Kingdom, Jun. 20, 1981, 8119096

Int. Cl.³ F23D *13/20*

U.S. Cl. 431—202 **3 Claims**



1. A flare tip comprising:

(a) an upwardly extending air supply tube for delivery of combustion air to the flare tip,

(b) an outer fuel supply tube co-axial with and spaced apart from said upwardly extending air supply tube to form an annular chamber having a fuel gas outlet capable of supplying low pressure combustible fuel gas to the flare tip, said annular chamber being longer than it is wide and extending co-axially substantially the length of the air supply tube,

(c) the upper part of the air supply tube comprising a plurality of channels or intrusions formed of equally spaced hollow projections from the inner surface of the air supply tube arranged symmetrically around the periphery, and equally spaced triangular cross-section combustion air outlet ducts lying between each intrusion, with upward and inward flow of fuel gas caused by passage along the intrusions encouraging mixing with the combustion air exiting the equally spaced outlet ducts,

(d) the upper part of the annular chamber having a circumferential deflector adapted to direct low pressure fuel gas inwardly towards the air issuing from the outlet of the air supply tube, said circumferential deflector being formed by the top of the outer fuel supply tube being turned inwards.

4,486,169

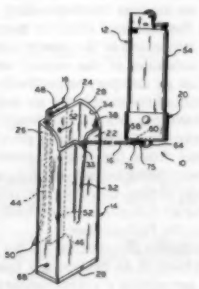
CIGARETTE LIGHTER SECURING ACCESSORY

Marcus E. Lewis, 7821 S. Rhodes Ave., Chicago, Ill. 60619

Filed May 20, 1983, Ser. No. 496,423

Int. Cl.³ F23Q *2/32*

U.S. Cl. 431—253 **10 Claims**



1. Cigarette lighter securing accessory comprising, in combination:

a lighter holder adapted for receiving a cigarette lighter thereon,

a lighter receptacle, said receptacle receiving said lighter therein,

means for removably connecting said receptacle to said lighter,

cord means interconnecting said holder and said receptacle extensibly therebetween to enable use of said lighter at a location remote from said holder, and

means for retracting said cord means from an extended position thereof, cooperatively with restoration of said lighter to said holder.

4,486,170

LIQUID FUEL COMBUSTION APPARATUS

Ichiro Tsukada; Yoshio Kato, and Tadashi Sakai, all of Kamo, Japan, assignors to Toshiba Heating Appliances Co., Ld., Kamo, Japan

Filed May 16, 1983, Ser. No. 494,926

Int. Cl.³ F23D *3/28*

U.S. Cl. 431—315 **11 Claims**

1. A liquid fuel combustion apparatus comprising:

combustion means including a tank capable of storing liquid fuel, a wick one end of which is inflammable and the other

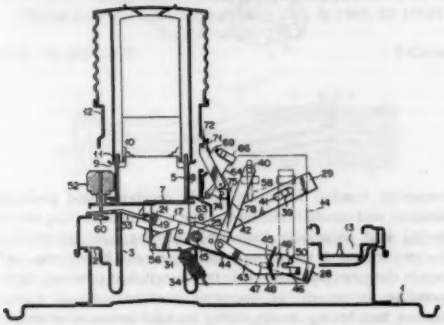
end of which can be immersed in the liquid fuel in the tank, a wick holder fixedly attached to the wick, and combustion and extinguish regions in which the one end of the wick can be burned and extinguished, the one end of the wick being movable along the longitudinal direction of the wick between the combusion and extinguish regions;

a rockable operating shaft extending substantially at right angles to the longitudinal direction of the wick;

wick holder supporting means attached to the operating shaft and supporting the wick holder, the wick holder being able to move along the longitudinal direction of the wick by the rotation of the operating shaft;

a first operating lever fixedly mounted on the operating shaft and swinging itself to rock the operating shaft in combustion and extinguish directions, thereby moving the one end of the wick toward the combustion and extinguish regions, respectively;

urging means for urging, in cooperation with the first operating lever, the operating shaft to rock in the extinguish direction, said urging means including a retaining lever rockably mounted on the operating shaft, an elastic member for urging the retaining lever to rock in the same direction as the extinguish direction of the operating shaft, and an engaging member for engaging the retaining lever and the first operating lever to rock the two levers in the same direction when the retaining lever rocks in the extinguish direction or when the first operating lever rocks in the combustion direction;



stop means for stopping the urging means from urging the operating shaft toward the extinguish region when the one end of the wick is in a predetermined position in the combustion region;

wick position adjusting means engaging the first operating lever when the one end of the wick is in the combustion region and moving the wick in the combustion region in cooperation with the first operating lever; and

release means for disengaging the stop means so that the urging means can return the wick to the extinguish region.

4,486,171

DISPOSABLE GAS LIGHTER AND DEVICE FOR FILLING SAME

Bernard Dumont, Les Avenieres, France, assignor to Feudor S.A., Rhone, France

Division of Ser. No. 298,739, Sep. 2, 1981, Pat. No. 4,448,226. This application Feb. 1, 1983, Ser. No. 462,984

Claims priority, application France, Sep. 5, 1980, 80 19587

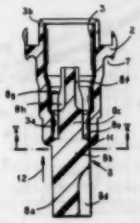
Int. Cl.³ F23Q 2/16

U.S. Cl. 431—344 **6 Claims**

1. In a lighter having a lighter body forming a reservoir, a well adapted to receive a filling valve assembly for the controlled outflow of fuel from said reservoir, the improvement which comprises in combination with said valve assembly of:

an annular wall portion formed on said well in said body; and

an axially shiftable obturator having axially spaced first, second and third sections, said first section being formed with a passage enabling filling of said reservoir through said well with a liquid fuel upon the positioning of said obturator with said first section in said wall portion in a first position of said obturator and prior to fitting of said valve assembly in said well, said second section of said



obturator having a cross section corresponding to that of said annular portion for blocking fuel flow from said well upon positioning of said second section in said annular portion in a second position of said obturator whereby said valve assembly can be inserted in said well without escape of fuel, said third section being of a cross section less than that of said annular portion whereby disposition of said obturator with said third section in said annular portion allows permanent free passage of fuel to said valve assembly after it has been inserted in said well.

4,486,172

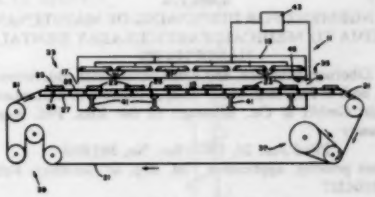
OVEN AND METHOD FOR HEATING THERMOPLASTIC ARTICLES

Leonard A. Dunning, Whippany, N.J., assignor to Allied Corporation, Morristown, N.J.

Filed Oct. 3, 1980, Ser. No. 193,686

Int. Cl.³ F27D 3/00, 11/00; F27B 9/22, 9/06

U.S. Cl. 432—11 **21 Claims**



1. An oven for uniformly heating thermoplastic articles comprising:

an oven housing in which there is an oven chamber having an inlet and outlet;

a conveyor belt passing through the oven chamber, the conveyor belt having an article bearing surface;

a heating plate located directly beneath the article bearing surface and in direct contact with the conveyor belt to uniformly heat thermoplastic articles on the conveyor belt; and

a means to heat the oven chamber.

4,486,173
HIGH-TEMPERATURE, HIGH-PRESSURE WORKPIECE TREATMENT SYSTEM

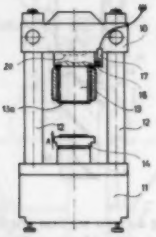
Ernst Hieber, Renningen; Hans-Dieter Kaden, Reutlingen; Helmut Martini, Weil der Stadt, and Gerhard Ziegler, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 26, 1983, Ser. No. 461,186

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1982, 3204994

Int. Cl.[3] **F27B** *5/04, 9/40;* **F27D** *1/16;* **F23C** *11/04*

U.S. Cl. 432—205 **8 Claims**



1. High-temperature high-pressure workpiece treatment system comprising

an apparatus frame having a lower frame element (**11**) forming a base, an upper frame element (**10**) located above the base, and a connecting column (**12**) securing the upper frame element above the lower frame element with predetermined spacing;

a worktable (**14**) movable (**A**) upwardly from the base towards the upper frame element for a limited distance and substantially less than the predetermined spacing;

and comprising, in accordance with the invention,

a set of essentially bell or inverted cup-shaped chamber structures (**13**, **13'** . . .) of different lengths, each structure having upper and lower surfaces and fitting within said frame; and

a set of spacing adapters (**15**, **15'**) having upper and lower adapter surfaces fitted between the respective chamber of a set and the upper frame element (**10**) to permit positioning of the lower surface (**13***a*, **13'***a* . . .) of the respective chamber structure within a range of operating movement of said worktable, regardless of the actual length of the specific chamber structure then installed in said frame.

4,486,174
ARRANGEMENT FOR DISPENSING OF MAINTENANCE MEDIA TO MEDICAL, PARTICULARLY DENTAL, HANDPIECES

Eugen Eibofner, Biberach, and Ernst Strohmaier, Bd. Schussenried, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany

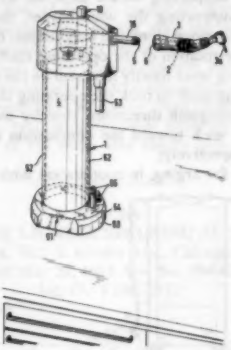
Filed Jan. 20, 1982, Ser. No. 341,089

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1981, 3104237

Int. Cl.[3] **A61C** *1/02, 1/08*

U.S. Cl. 433—104 **1 Claim**

1. In an arrangement for the dispensing from a receptacle of pressurizable cleaning and lubricating media constituting maintenance media to movable components retaining medical, and particularly dental handpieces; including a pressure drive forcing the maintenance medium from a dispensing opening of said receptacle through an inlet opening of a handpiece attached to the dispensing opening; and a motion drive for setting the movable components into motion during the forcing in of the maintenance medium; the improvement comprising: separate power sources being associated with respectively said motion drive and said pressure drive; separate switch elements for activating and deactivating respectively said motion drive power source and said pressure drive power source; a common actuating element being operatively associated with said separate switch elements, said common actuating element actuating said motion drive power source prior to actuating said pressure drive power source, said common actuating element comprising a pressure element, said pressure element comprising a pressure member actuatable upon the attachment of the handpiece inlet opening to the receptacle dispensing opening, a



connector conduit for reciprocably receiving said pressure member, said conduit communicating with a connecting sleeve having said receptacle dispensing opening, said connecting sleeve forming a mounting means for said handpiece, and switch elements being movable into a switched position corresponding to one of the operating positions of said power sources; and spring means acting on said common actuating element to exert a biasing force thereon opposite the motion of said switch elements.

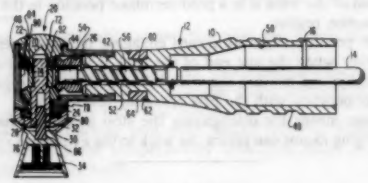
4,486,175
DENTAL APPLIANCE

Leo Fisher, Denver, and Atilla Weiser, Westminster, both of Colo., assignors to Teledyne Industries, Inc.

Filed Nov. 1, 1982, Ser. No. 438,048

Int. Cl.[3] **A61C** *1/02*

U.S. Cl. 433—104 **4 Claims**



1. A dental handpiece comprising:

an elongated hollow tube;

an elongated drive shaft supported within said tube for axial rotation;

means for coupling one end of said tube to a handle and for coupling one end of said shaft to a source of rotary power;

a head joined to the other end of said tube and defining an interior cavity;

a hub mounted in said cavity for rotation about an axis disposed at an angle with respect to said shaft;

motion translating means disposed in connection with said

cavity for transmitting rotary force from said shaft to said hub;

an opening defined in said head and leading outwardly from said cavity, a portion of said hub being accessible through said opening;

means effectively defined in said hub for securing a dental attachment thereto in a location beyond said opening from said cavity;

means for creating a seal between said opening and said hub in order to prevent fluid flow therethrough;

means for introducing a lubricant effectively within said tube; and

means actuated by said shaft for propelling said lubricant into said motion translating means.

4,486,176

HAND HELD DEVICE WITH BUILT-IN MOTOR

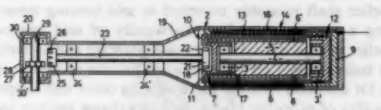
Pierre R. Tardieu, Chateauneuf-sur-Sarthe, and Yves H. Mulet-Marquis, Le Lion d'Angers, both of France, assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Oct. 8, 1982, Ser. No. 433,527

Claims priority, application France, Oct. 8, 1981, 81 18981

Int. Cl.³ A61C *1/12*

U.S. Cl. 433—133 **7 Claims**



1. A hand held piece with integrated toolholder and electric drive motor assembly comprising, an outer housing with a rear end part of a diameter sufficient for incorporating an electric drive motor assembly, an intermediary housing having a conical section, and a tool head housing having a reduced diameter and forming a housing for the toolholder, a toolholder shaft in said toolholder housing, at least one pair of permanent magnets mounted in a plastic disc at the end of said toolholder shaft a brushless electric motor drive assembly having a rotor assembly comprising permanent magnets having coaxial outer surfaces coated with a layer of electrically conductive metal mounted on a rotor shaft, one end of said rotor assembly permanent magnets extending beyond the end of said rotor shaft, said rotor shaft being rotatably mounted and hermetically sealed in said outer housing on a rotor housing of insulating material, said motor assembly further having a stator assembly having winding coils of a multi-phase field winding embedded in a layer of insulating material and at least one transmission shaft between said rotor shaft and said toolholder shaft, said transmission shaft having, at each of its ends, a plastic disc, each of said transmission shaft discs having at least one pair of permanent magnets, said one end of said rotor assembly permanent magnets extending beyond the end of said rotor shaft and said permanent magnets in said plastic disc and at one of the ends of said transmission shaft forming a magnetic coupling when said electric motor rotor is rotated to rotate said transmission shaft, the permanent magnets in the plastic disc at the other end of said transmission shaft forming magnetic coupling with the permanent magnets in the plastic disc on said toolholder shaft.

4,486,177

CROWN REMOVAL TOOL

Raymond E. Lekawa, 302 S. Alandale Ave., Tucson, Ariz. 85710

Filed Sep. 24, 1982, Ser. No. 423,019

Int. Cl.³ A61C *3/00*

U.S. Cl. 433—161 **5 Claims**

1. A crown removal tool for removing crowns from patient's teeth comprising:

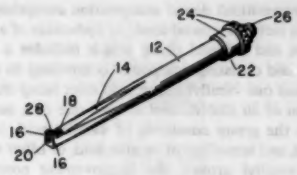
an elongated hollow cylindrical body having a first and second end;

a pair of transversely protruding spaced apart tangs attached at the first end of said elongated cylindrical body;

an elongated slot formed between said spaced apart tangs;

an inner rod slidable in said elongated cylindrical body, said inner rod having a first and second end; and

a transversely protruding tang attached to the first end of



said inner rod, said tang adapted to slidably reside in said elongated slot, said pair of spaced apart tangs of said elongated hollow cylindrical body and said tang of said inner rod adapted to engage opposite sides of a groove formed in the patient's tooth crown where by sliding said inner rod in said hollow cylindrical body, said tangs are separated and thus separate the sides of the groove in the crown causing the crown to fracture and separate from the patient's tooth.

4,486,178

TOOTH IMPLANT MADE OF METAL

Willi Schulte, Tüingen, Fed. Rep. of Germany, assignor to Friedrichsfeld GmbH Steinzeug-und Kunststoffwerke, Mannheim, Fed. Rep. of Germany

Filed Aug. 10, 1983, Ser. No. 521,663

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 3230374

Int. Cl.³ A61C *8/00*

U.S. Cl. 433—173 **3 Claims**

1. An implant for anchoring a dental prosthesis comprising a metal implant body for inserting in the jaw bone, a metal superstructure comprising said dental prosthesis or part thereof, and an insulating ceramic part located between and connecting said implant body to said superstructure, said ceramic part electrically isolating said implant body from said superstructure.

4,486,179

BIOCOMPATIBLE CEMENTITIOUS DENTAL COMPOSITIONS

Gerhard M. Brauer, Bethesda, and Jeffrey W. Stansbury, College Park, both of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Feb. 23, 1984, Ser. No. 582,759
Int. Cl.³ A61K 6/08
U.S. Cl. 433—199 26 Claims

1. In a cementitious dental composition comprising a solid phase which includes a metal oxide or hydroxide of a Group II metal or tin and a liquid phase which includes a chelating compound, said chelating compound comprising an ester containing at least one vanillyl group, said ester being the product of a reaction of an alcohol and at least one of a member selected from the group consisting of vanillic acid, isomers of vanillic acid, and homologs of vanillic acid, or other molecules containing vanillyl groups, the improvement comprising a syringic acid ester in an amount sufficient to inhibit caries formation.

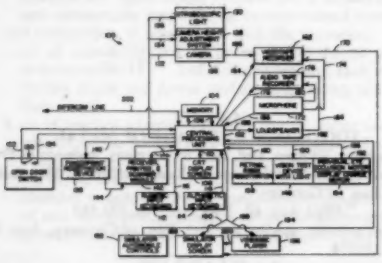
20. A cementitious dental composition comprising a solid phase which includes a metal oxide or hydroxide of a Group II metal or tin and a liquid phase which includes a chelating compound, said chelating compound comprising a syringic acid ester in an amount sufficient to inhibit caries formation.

4,486,180

TESTING SYSTEM WITH TEST OF SUBJECT MATTERS, IDENTIFICATION AND SECURITY

Michael D. Riley, c/o Cunningham & Walsh, Inc., 500 Sansome St., San Francisco, Calif. 94111

Filed Apr. 27, 1982, Ser. No. 372,114
Int. Cl.³ G09B 9/04
U.S. Cl. 434—65 7 Claims



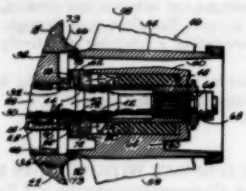
1. A system for test administration comprising data processing means for controlling operation of the system and presenting the test to a person being tested, a display connected to said data processing means for showing instructions and test questions to the person being tested, input means connected to said data processing means for the person being tested to respond to the test questions, means connected to said data processing means for recording at least one personal physical body characteristic unique to the person being tested, said display, said input means, and said physical characteristic recording means being located in a booth having a door which will block entrance and exit from the booth when closed, said system further including means activated by closing the door for allowing initiation of the test, and for aborting the test if the door is opened before completion of the test, said booth having at least one transparent portion for allowing observation into said booth from outside said booth when the booth door is closed and a vision testing means in said booth connected to said data processing means, the person being tested responding to a vision test presented by said vision testing means with said input means.

4,486,181

MARINE PROPULSION DEVICE INCLUDING THRUST BUSHING ANODE

David T. Cavil, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 5, 1982, Ser. No. 365,295
Int. Cl.³ B63H 1/14
U.S. Cl. 440—49 5 Claims



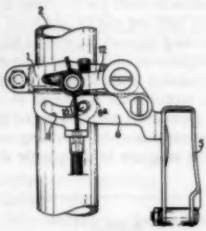
1. A marine propulsion device comprising a lower unit including a gearcase having a hollow interior including an open rearward end, a bearing retainer fixed in said hollow interior of said gearcase and including therein an exhaust passage communicating with the exhaust port of an internal combustion engine, bearing means mounted in said retainer, a propeller shaft rotatably mounted in said bearing means and having a portion extending rearwardly of said gearcase, a propeller in adjacent relation to said gearcase and including an inner hub mounted on said rearward portion of said propeller shaft for common rotation therewith, an outer hub supporting a plurality of propeller blades, and an exhaust passage located between said inner and outer hubs and communicating with said exhaust passage in said bearing retainer, a thrust bushing carried by said propeller shaft and located between said bearing retainer and said inner hub without interfering with exhaust gas flow from said bearing retainer exhaust passage to said propeller exhaust passage, and a sacrificial anode located between said thrust bushing and said bearing retainer without interfering with exhaust gas flow from said bearing retainer exhaust passage to said propeller exhaust passage, whereby to provide cathodic protection for said open rearward end of said gearcase and said bearing retainer.

4,486,182

DERAILLEUR MECHANISM FOR A BICYCLE

Maurice E. L. Coué, Feucherolles, France, assignor to Huret et ses Fils, Nanterre, France

Filed Jun. 14, 1982, Ser. No. 388,208
Claims priority, application France, Jun. 17, 1981, 81 11972
Int. Cl.³ F16H 11/08
U.S. Cl. 474—80 10 Claims



1. A derailleur mechanism for a bicycle, the derailleur comprising support means, a fork member for guiding and shifting a chain, a lateral arm on said fork member, a link connecting the lateral arm to the support means, said link having a first pivot pin having a pivot center and located adjacent a first end

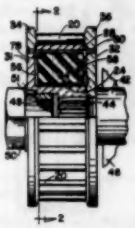
of the link for pivotally connecting the link to the support means and a second pivot pin having a pivot center and located adjacent a second end of the link for pivotally mounting the link on the lateral arm, means defining a pin-and-slot connection between the lateral arm and the support means, said slot having a mean line in the shape of an arc of a circle whose radius is equal to the distance between said pivot center of said first pivot pin and said pivot center of said second pivot pin, said mean line having a center of curvature which is so located that a segment joining said center of curvature to said center of said first pivot pin is substantially equal to and substantially parallel to a segment joining said center of said pin of said pin-and-slot connection to said center of said second pivot pin, and actuating means connected to said link.

4,486,183

TORSIONALLY ELASTIC POWER TRANSMITTING DEVICE AND DRIVE

Richard W. Poslvista, Lakewood; Dennis Kemper, Aurora, and William L. Westhoff, Denver, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Jun. 30, 1980, Ser. No. 164,652
Int. Cl.³ F16H *55/14*; F16D *3/12*
U.S. Cl. 474—94 **24 Claims**



1. A shock-absorbing torsionally elastic power transmitting device comprising:

a rotatable input drive means;

a rotatable output driven means; and

resilient spring cushions linking the input drive means to the output driven means in power transmitting relation and displaceable under load, said cushions comprising bodies of elastomeric material loaded with modulus and hysteresis-increasing fibrous reinforcement.

20. A shock-absorbing torsionally elastic single or multiple V-belt or V-ribbed belt power transmission accessory drive assembly for use with an engine exhibiting substantial speed excursions a low rpm, comprising:

a plurality of sheaves each having a peripheral surface provided with at least one V-shaped groove on its driving surface adapted to receive the belt in driving relation:

at least one of said sheaves being a shock-absorbing crankshaft sheave assembly, adapted to be coupled to the crankshaft of the engine, and including a rotatable hub having at least two lugs protruding therefrom, a rotatable rim having at least two radially inwardly extending ears adapted to indirectly matingly engage the lugs of the hub and having a peripheral surface formed with said at least one V-shaped groove, and resilient elastomeric cushions interposed in cavities between the lugs and ears in driving relation;

said crankshaft sheave being provided with a captive void volume defined as an individual cavity volume less the volume occupied by the cushion contained in that cavity of such amount to allow, in operation, the hub and rim to undergo relative angular deflections of from about 3 to about 7 degrees; and

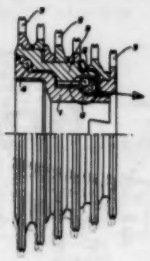
a single or multiple V-belt and V-ribbed belt trained about the sheaves in friction driving relation.

4,486,184

FREE-WHEEL FOR BICYCLES

Tullio Campagnolo, Vicenza, Italy, assignor to Campagnolo S.p.A., Vicenza, Italy

Filed Aug. 31, 1982, Ser. No. 413,453
Claims priority, application Italy, Sep. 22, 1981, 23004/81[U]
Int. Cl.³ F16H *55/30*
U.S. Cl. 474—165 **2 Claims**



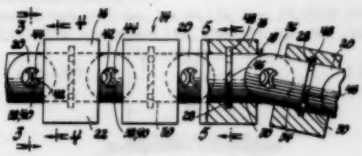
1. A freewheel for a bicycle, comprising an inner body integral with a wheel hub of the bicycle, an outer body carrying chain drive sprockets, two circumferential series of balls by which said outer body rolls on said inner body, one said set of balls having a seat on which the balls of said one set roll, said seat being screw-threadedly engaged on the inner body, and mutually engaging annular conical surfaces coaxial with the freewheel between said seat and said body.

4,486,185

FRICTION DRIVE CHAIN

Roy S. Cataldo, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 13, 1983, Ser. No. 541,549
Int. Cl.³ F16G *1/00*
U.S. Cl. 474—201 **2 Claims**



1. A friction drive chain comprising a plurality of substantially cylindrical core members; means pivotally connected adjacent core members; a plurality of drive blocks each having a longitudinally extending cylindrical passage means for permitting each drive block to be mounted on a respective core member and a pair of external drive surfaces adapted to frictionally engage a pulley; annular groove means formed in the interior of each drive block perpendicular to the longitudinal direction of said passage means; annular groove means formed on the exterior of each core member perpendicular to the longitudinal dimension thereof; and retention clip means disposed in the annular grooves of respective pairs of said core members and said drive block for positioning and retaining each said drive block on the respective core member and for transmitting drive forces applied to the external drive surfaces to said respective core members.

4,486,186

METHOD AND MACHINE FOR MAKING FILTER ROD SECTIONS FOR CIGARETTES OR THE LIKE

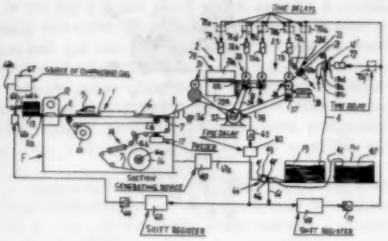
Peter Grumer, Tespe, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Jun. 29, 1982, Ser. No. 393,495

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1981, 3127911

Int. Cl.³ A24C 5/50

U.S. Cl. 493—4 38 Claims



1. A method of making filter rod sections for incorporation into smokers' products, comprising the steps of establishing and maintaining first and second sources which respectively contain first and second tows consisting of filamentary filter material and each having a leader and a trailing end; subjecting the first tow to a plurality of treatments including advancing the first tow along a predetermined path and processing the first tow in several portions of said path; making between the trailing end of the first tow and the leader of the second tow a splice which is set in motion on expiry of the first tow and the resulting advancement of the second tow along said path; and altering at least one of said treatments in automatic response to movement of the splice.

4,486,187

METHOD MAKING A DISPENSING BAG

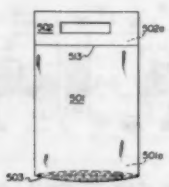
Robert D. Foster, R.R. 1, St. Anns, Ontario, Canada (L0R 1YO)

Continuation-in-part of Ser. No. 159,438, Jun. 13, 1980, abandoned. This application Jun. 9, 1982, Ser. No. 386,537

Claims priority, application Canada, Nov. 26, 1979, 340658

Int. Cl.³ B31B 35/00

U.S. Cl. 493—194 6 Claims



1. A method of forming a dispensing bag for particulate matter from a section of an elongated strip of sheet material, comprising the steps of:

forming dispensing apertures through said strip of sheet material in a region adjacent the longitudinal center line of the strip;

folding a segment of the strip along its center line and along two further fold lines spaced from each side of, and parallel to, said center line, to form two superposed congruent portions of sheet material having folded edges joined by an integral inwardly projecting gusset therebetween at one side thereof, the central portion of said gusset containing dispensing apertures;

joining the gusset to the adjacent superposed portions of sheet material along lines parallel to said folded edges and located between the dispensing apertures and said folded edges;

forming an openable junction between said folded edges of said superposed sheet portions; and

severing a section of said folded segment of sheet material from said strip, and joining the superposed portions of sheet material together along opposed peripheral edges of said severed section to form a bag open at the end remote from said gusset but otherwise closed.

4,486,188

BONE MARROW TRANSPLANT METHOD AND APPARATUS

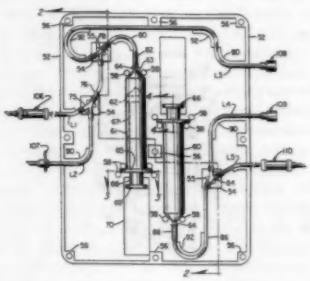
John H. Altshuler, Englewood, and Dean T. Farrish, Parker, both of Colo., assignors to Applied Medical Devices, Inc., Englewood, Colo.

Continuation of Ser. No. 177,875, Aug. 14, 1980,. This application Apr. 8, 1982, Ser. No. 366,591

The portion of the term of this patent subsequent to Nov. 13, 2001, has been disclaimed.

Int. Cl.³ A61M 5/14, 1/02

U.S. Cl. 604—4 18 Claims



1. A bone marrow transplant apparatus comprising:

pump means connected to a bone marrow collecting means, a storage means, and a solution means,

said solution means adapted to be connected to a source of marrow-replacing solution, and including an infusion means connected to said pump means, said infusion means adapted to be inserted at the same bone marrow site as said bone marrow collecting means, and

a pump control means for activating said pump means which on one cycle selectively aspirates bone marrow through said bone marrow collecting means and infuses marrow-replacing solution through said infusion means into the same site and on an alternate cycle selectively directs the collected marrow into said storage means.

4,486,189

DUAL MODE HEMODIALYSIS SYSTEM

Vernon H. Troutner, St. Petersburg, and Richard A. Morrow, Tarpon Springs, both of Fla., assignors to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Filed Sep. 24, 1982, Ser. No. 423,376

The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.

Int. Cl.³ A61M 1/03

U.S. Cl. 604—5 6 Claims

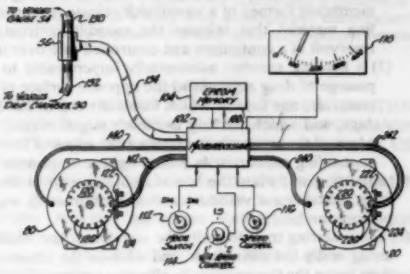
1. A hemodialysis system for a patient which is capable of operation in either a single needle mode or a double needle mode comprising:

a first arterial blood pump having an input adapted to withdraw blood from said patient and an output, said arterial blood pump being the only operational blood pump in said system during said double needle mode;

a dialyzer having an input coupled to the output of said arterial blood pump and an output;

means, having an input coupled to the output of said dialyzer and an output for returning blood to said patient, said means comprising, during said single needle mode, a second venous blood pump;

a pump speed control coupled to the operational pumps during said respective modes for establishing pump speeds during said modes;



control means, coupled to said pump speed control and to said operational pumps during said respective modes, for continuously activating said arterial blood pump during said double needle mode, and for alternately activating said arterial and venous pumps during said single needle mode; and

a pump speed ratio control coupled to said control means for setting the speed ratio of said venous and arterial blood pumps, wherein said control means is responsive to the setting of said ratio control only during said single needle mode.

4,486,190

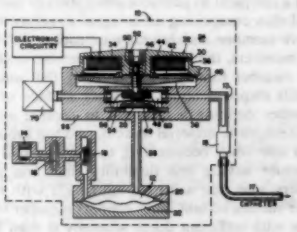
PRECISION MEDICATION DISPENSING SYSTEM AND METHOD

Robert H. Reinicke, Mission Viejo, Calif., assignor to Consolidated Controls Corporation, El Segundo, Calif.

Filed Dec. 27, 1982, Ser. No. 453,594

Int. Cl.³ A61M *37/00*

U.S. Cl. 604—67 **27 Claims**



1. In a system for infusing medication into a body, the combination of, a medication reservoir, a flow restriction means having an outlet for infusing medication into the body, metering means connected betwen said reservoir and the inlet of said flow restriction means for periodically supplying a small portion of the medication in said reservoir to the inlet of said flow restriction means during successive spaced apart dispensing periods, means for measuring the exact amount of medication supplied to said flow restriction outlet during each dispensing period, said measuring means including a pressure transducer for developing a signal corresponding to the pressure transient developed at said inlet of said flow restriction means during each of said dispensing periods, and means responsive to said measuring means for varying the time between successive dispensing periods so as to maintain the rate of infusion of medication into the body at a desired value.

4,486,191

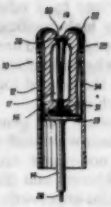
TAMPON

Joseph Jacob, Wooster, Ohio, assignor to Technology Unlimited Inc., Wooster, Ohio

Filed Aug. 12, 1982, Ser. No. 407,468

Int. Cl.³ A61F *5/46*

U.S. Cl. 604—330 **8 Claims**



1. A tampon, comprising:

an elongated body of absorbent material encapsulated in a moisture barrier;

said body having a forward end terminating in a parameter wall;

means for spreading the forward end perimeter wall of said body to an open funnel configuration;

separate means for drawing the forward end perimeter wall of said body in an inward direction toward the center of the body, whereby the body forward end is opened upon insertion into the vagina of a menstruating female user such that the forwad end of the body in the open position essentially caps the cervix of such user and then is drawn closed to entrap menstrual fluid within the absorbent body.

4,486,192

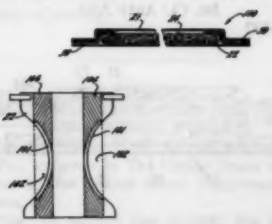
CONFORMABLE GARMENTS WITH DISCRETE ELASTICIZED AREAS

Wayne C. Sigl, Black Creek, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 94,421, Nov. 15, 1979, Pat. No. 4,300,967. This application Mar. 31, 1981, Ser. No. 249,733

Int. Cl.³ A41B *13/02*

U.S. Cl. 604—385 **3 Claims**



1. In a disposable, unitary and generally elongated diaper having a substantially planar waistband section at each end and a narrow substantially non-planar crotch section having curved longitudinal edges and being disposed between said ends and wherein said diaper is comprised of a porous facing sheet, a fluid-impervious backing sheet and an absorbent batt

disposed between said sheets and in which the peripheries of said facing and backing sheets adjacent said batt and joined to each other, elastically extendible means for longitudinally contracting said narrow crotch section, said contraction being obtained by having a least one each of said elastically extendible means secured while in extended condition to at least one of said facing sheet or said backing sheet along the length of and adjacent each longitudinal edge of said crotch section, the improvement wherein each of said elastically extendible means comprises a straight length of thermoplastic elastomeric urethane material, said urethane material having a curved live elastic portion positioned along the straight length of urethane material and conforming to the shape of the crotch section, the entire remaining portion of the urethane material being substantially in an elastically "killed" condition, and said urethane material being characterized by a relatively strong adhesive property and a relatively high coefficient of friction so as to substantially prevent slippage of said urethane material relative to said diaper whereby when said elastically extendible means are relaxed and contract the bonded together diaper structure is elasticized in the crotch section.

3. In a disposable, unitary and generally elongate diaper having a substantially planar waistband section at each end and a narrow substantially non-planar crotch section disposed between said ends and wherein said diaper is comprised of a porous facing sheet, a fluid-impervious backing sheet and an absorbent batt disposed between said sheets and in which the peripheries of said facing and backing sheet adjacent said batt are joined to each other, elastically extendible means for longitudinally contracting said narrow crotch section, said contraction being obtained by having at least one each of said elastically extendible means secured while in extended condition to the backing sheet along the length of and adjacent each edge of said crotch section, the improvement wherein the elastically extendible means comprises a thermoplastic elastomeric urethane material, said urethane material having been substantially "killed" in the waistband section of said diaper, and said urethane material being characterized by a relatively strong adhesive property and a relatively high coefficient of friction so as to substantially prevent slippage of said urethane material relative to said diaper, the elastically extendible means overlying the longitudinal edges of said absorbent batt in the crotch section between the batt and the porous facing sheet whereby the elastically extendible means serves the dual function of elasticizing said crotch section and providing a moisture barrier.

4,486,193

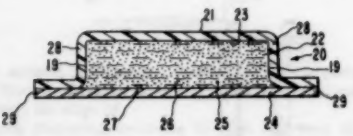
METHOD FOR TREATING ISCHEMIC CONDITIONS BY ADMINISTERING DRUG BY TWO ROUTES

Jane Shaw, Atherton, and Robert M. Gale, Mountain View, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 285,862, Jul. 22, 1981, Pat. No. 4,384,898. This application Feb. 4, 1983, Ser. No. 464,068

Int. Cl.³ A61F 7/02

U.S. Cl. 604—897 **9 Claims**



1. A method for the prophylaxis treatment of angina pectoris in human, which method consists essentially of:

(a) placing on the skin of a human afflicted with angina pectoris a medical bandage consisting essentially of:

(1) a reservoir consisting essentially of a composition consisting essentially of a gel formed of (i) a member selected from the group consisting of an inorganic oil and an organic oil, (ii) a cellulose in an amount sufficient to gel the oil, and (iii) a vasodilator drug in an amount sufficient for treating angina pectoris distributed throughout the gelled reservoir;

(2) a membrane adjacent to one surface of the reservoir, one face of which forms the bottom of the bandage, the membrane formed of a vasodilator release rate controlling material that releases the vasodilator from the reservoir at a continuous and controlled rate over time;

(3) a backing member substantially impermeable to the passage of drug adjacent to the opposite surface of the reservoir, one face of which forms the top of the bandage, and which backing member's edges overlay the edges of the reservoir and contact the edges of the rate controlling membrane in a fluid tight arrangement;

(b) admitting orally into the human a pharmaceutical dosage form containing a vasodilator useful for treating angina pectoris; and,

(c) administering transdermally the vasodilator and administering orally the vasodilator, and wherein the administrations lessen the therapeutically effective amount of vasodilator orally needed for treating the angina pectoris in the afflicted human.

4,486,194

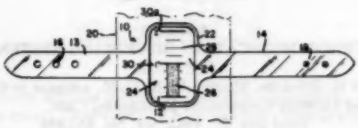
THERAPEUTIC DEVICE FOR ADMINISTERING MEDICAMENTS THROUGH THE SKIN

James Ferrara, 1 Armstrong Ave., Methuen, Mass. 01844

Filed Jun. 8, 1983, Ser. No. 502,212

Int. Cl.³ A61F 7/02

U.S. Cl. 604—897 **1 Claim**



1. A therapeutic device adapted to receive a therapeutic material and maintain said material in contact with the external body skin of a recipient to promote absorption of said material through said skin comprising an integral structure having an inner support member and laterally extending flexible elongated outer members, the inner support member comprising a top support member having a substantially flat inner surface and side walls disposed about the inner surface of said top support member defining a chamber to receive and hold a quantity of therapeutic material therein, said top support member and said side walls cooperating to provide said chamber with a structure having less flexibility than said elongated outer members, said side walls having height with respect to the said inner surface of said inner support member to provide said chamber with sufficient depth whereby at least the lower surface of said therapeutic material is maintained in contact with said body skin, means disposed on said inner surface of said top support member for detecting when a predetermined amount of therapeutic material has been deposited upon said inner surface comprising a plurality of spaced raised members, indicia of measurement associated with said spaced raised members, and means disposed on said outer flexible elongated portions for securing said therapeutic device to said recipient.

4,486,195

LAUNDERING COMPOSITIONS

Morris Weinstein, Paramus, and Lorraine Lillis, Jersey City, both of N.J., assignors to Millmaster Onyx Group Inc., New York, N.Y.

Filed Mar. 5, 1984, Ser. No. 586,002
Int. Cl.³ D06M *13/20, 13/40*
U.S. Cl. 8—137 24 Claims

1. A fabric treating composition comprising a mixture of an effective amount of a fatty acid amidopropyl dimethylamine and an effective amount of a fatty acid amidopropyl betaine.

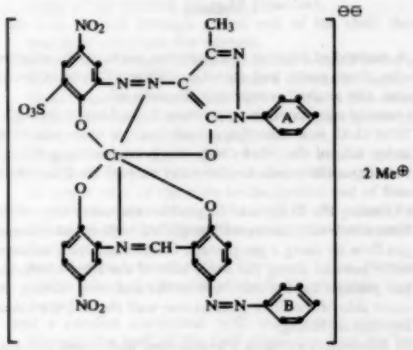
4,486,196

CHROME-COMPLEX DYES AND THE PRODUCTION AND USE THEREOF FOR DYEING WOOL, POLYAMIDE

Alois Püntener, Rheinfelden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 267,311, May 28, 1981, Pat. No. 4,443,370.
This application Jan. 16, 1984, Ser. No. 571,059
Claims priority, application Switzerland, Jun. 5, 1980, 4345/80
Int. Cl.³ C09B *45/16;* D06P *3/14*
U.S. Cl. 8—437 10 Claims

1. A process of dyeing a polyamide, comprising the step of applying thereto a chrome-complex dye of the formula



wherein the phenyl groups A and B independently of one another are each unsubstituted or are mono- or disubstituted by chlorine, methyl, ethyl, methoxy or ethoxy, and wherein Me⊕ is a cation.

4,486,197

FIBROUS PRODUCT CONTAINING VISCOSE

Frederick R. W. Sloan, London, England, assignor to Lintrend Licensing Company Limited, London, England

PCT No. PCT/GB81/00120, § 371 Date Feb. 3, 1982, § 102(e) Date Feb. 3, 1982, PCT Pub. No. WO82/00164, PCT Pub. Date Jan. 21, 1982
Continuation-in-part of Ser. No. 237,874, Feb. 25, 1981, abandoned. This PCT application Jul. 1, 1981, Ser. No. 354,086
Claims priority, application United Kingdom, Jun. 3, 1981, 8021888; Jul. 3, 1981, 8021889
Int. Cl.³ D06M *1/24, 1/22, 1/02;* D06P *1/56*
U.S. Cl. 8—493 21 Claims

1. A process of improving the wet and dry crease resistance and softness of a fabric comprising viscose fibers comprising impregnating said fabric with a polyfunctional cross-linking agent that will react with and bridge between hydroxy groups in the cellulose molecules in the viscose fibers, and an activator for the cross-linking agent, heating said impregnated fabric to effect cross-linking, mercerizing said fabric while allowing shrinkage of said viscose fibers and maintaining said shrunk viscose fibers in said fabric whereby said fabric remains shrunk by a final shrinkage of at least 5% and then impregnating said viscose shrunk fabric with a curing system selected from cross-linking agents and textile resins together with an activator for the curing system, and heating said impregnated shrunk fabric to cure the curing system.

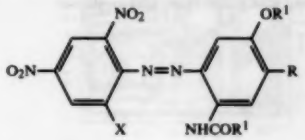
4,486,198

NAVY DYE MIXTURES

Ernst Becker, Ludwigshafen; Udo Bergmann, Darmstadt; Helmut Degen, Frankenthal; Guenter Hansen, Ludwigshafen, and Reinhold Krallmann, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

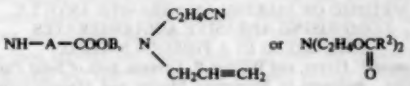
Filed Jan. 13, 1984, Ser. No. 570,455
Int. Cl.³ C09B *29/08*
U.S. Cl. 8—639 3 Claims

1. A navy dye mixture which essentially contains dyes of the formula I

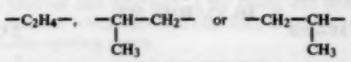


I

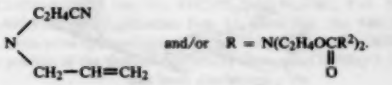
where X is hydrogen, chlorine or bromine, the radicals R^1 independently of one another are each methyl or ethyl and R is a radical of the formula



where A is $—C_2H_4—$,



B is unsubstituted or substituted C_1–C_4-alkyl, phenyl-C_1–C_4-alkyl, phenoxy-C_2- or -C_3-alkyl or cyclohexyl and R^2 is C_1–C_4-alkyl, the mixtures containing from 20 to 80 parts of dyes in which R is NH-A-COOB and from 80 to 20 parts of dyes in which R is



4,486,199

FLUIDIZED BED GASIFICATION ASH REDUCTION AND REMOVAL PROCESS

Carl E. Schenone, Madison, and Joseph Rosinski, Vanderbilt, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 342,024, Jan. 21, 1982, Pat. No. 4,433,978.
This application Sep. 13, 1983, Ser. No. 531,791
Int. Cl.³ C10J *3/54*
U.S. Cl. 48—197 R 2 Claims

1. A process for discharging particulate wastes from a fluidized bed gasifier comprising the steps of:

1. gasifying a carbonaceous material in a fluidized bed disposed within said gasifier to form a solid waste product;
2. conveying said waste to a crusher disposed below said gasifier;

3. crushing said waste;
4. conveying said waste into a container disposed below said crusher;

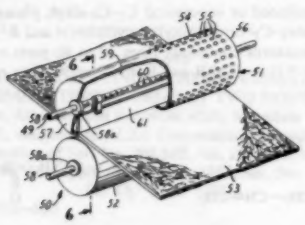
5. detecting the level of said waste in said container;
6. discharging said waste from said container.

4,486,200

METHOD OF MAKING AN ABRASIVE ARTICLE COMPRISING ABRASIVE AGGLOMERATES SUPPORTED IN A FIBROUS MATRIX

Raymond F. Heyer, and William R. Lovness, both of Saint Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 186,470, Sep. 15, 1980, Pat. No. 4,355,489. This application Sep. 9, 1982, Ser. No. 416,366
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—295 **3 Claims**



1. A method of making an abrasive article, said method comprising the steps of

forming within a lofty web comprising undulated filaments bonded at points of mutual contact by depositing in a pattern with an appropriate printing or extruding device a plurality of separated agglomerates formed of a mixture of uncured liquid curable bonding agent and abrasive particles, said agglomerates having an average particle size of at least 2 mm to provide an agglomerate-impregnated web; and

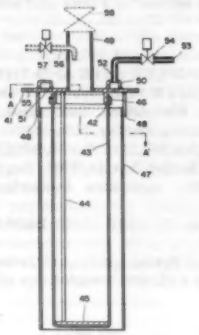
curing said bonding agent to convert said agglomerates to abrasive agglomerates comprising abrasive particles bonded together with said bonding agent, said bonding agent and said abrasive particles being selected to provide an abrasive particle to bonding agent weight ratio of about 1:1 to 20:1.

4,486,201

METHOD AND APPARATUS FOR FILTERING GASES CONTAINING FINE PARTICLES AND CLEANING A FILTER CLOTH OF COLLECTED PARTICLES

Haruo Noguchi, Yokohama, Japan, assignor to Colortronic Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1982, Ser. No. 437,684
Claims priority, application Japan, Oct. 30, 1981, 56-172948
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—96 **17 Claims**



1. A method of filtering fine particles, particularly adherent particles, from gases, and cleaning a filter cloth of collected particles, the method comprising the steps of:

(a) passing a gas containing particles to be filtered through a filter cloth in a collecting vessel from an outer side to an inner side of the filter cloth, the particles being filtered forming a filter cake on the outer side of the filter cloth; and

(b) cleaning the filter cake formed on the outer side of the filter cloth with an overall amplified high-speed cleaning gas flow by using a gas passage formed and lying substantially parallel along the outer side of the filter cloth, the gas passage having inlet and outlet ends and having the outer side of the filter cloth as one wall thereof, the cleaning step including

(i) momentarily jetting a pressurized high-speed cleaning gas toward the inlet end of the gas passage from an open space in the collecting vessel upstream of the inlet end of the gas passage;

(ii) mixing additional gas existing at the open space in the collecting vessel upstream of the inlet end of the gas passage with the jetted cleaning gas due to the pneumatic ejector effect of the high-speed cleaning gas; and

(iii) providing the overall amplified high-speed cleaning gas flow formed by the jetted mixed gas through the gas passage past the outer side of the filter cloth having the filter cake.

4,486,202

ASYMMETRIC GAS SEPARATION MEMBRANES

Raymond F. Malon, Edmundson, and Anthony Zampini, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 30, 1983, Ser. No. 509,613
Int. Cl.³ B01D *53/22*
U.S. Cl. 55—158 **6 Claims**

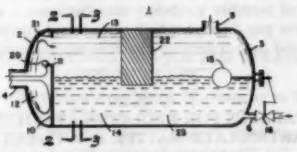
1. An asymmetric gas separation membrane exhibiting improved gas separation selectivity comprising, a preformed asymmetric separation membrane of material having selective permeation of at least one gas of a gaseous mixture over that of one or more remaining gases of the gaseous mixture which has been contacted on one or both surfaces with an effective amount of a Lewis acid, wherein with respect to the at least

one gas, the acid contacted membrane exhibits a separation factor greater than the separation factor exhibited by the membrane before acid contact.

4,486,203
INLET MOMENTUM ABSORBER FOR FLUID SEPARATION

Mitchel L. Rooker, Sand Springs, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 15, 1983, Ser. No. 485,526
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—174 **5 Claims**



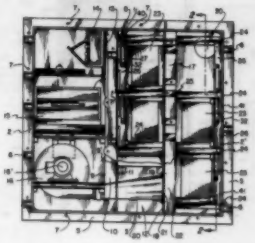
1. A separator for a mixture of two fluids of different densities, including,
   - a horizontally extended cylindrical shell within which the fluids of the mixture are to be separated,
   - an inlet formed through a first end of the shell through which to introduce the mixture,
   - a substantially vertically extended plate welded to the internal walls of the shell and extends a horizontal upper edge higher than the level of the inlet to form a first compartment with the first end of the shell and provide an impact surface for the mixture through the inlet,
   - a passage formed the length of the horizontal cylindrical shell from the first end of the shell and below the horizontal upper edge of the plate to the second end of the shell,
   - an outlet structure through the wall of the vessel for the lighter of the fluids from the passage downstream of the first compartment,
   - a second compartment within the vessel below the passage within which the heavier of the fluids gravitates from the passage,
   - and a conduit connected with the second compartment through the wall of the shell through which the heavier fluid is removed.

4,486,204
FILTER CASING FOR AN AIR CONDITIONING SYSTEM

Gerard J. Marijnissen, Groot-Ammers, and Robert Schenk, Voorburg, both of Netherlands, assignors to Installatiegroep van Bauren-Van Swaay B.V., Zoetermeer, Netherlands

Filed May 21, 1982, Ser. No. 380,833
Claims priority, application Netherlands, May 21, 1981, 8102505
Int. Cl.³ B01D *50/00, 51/00, 53/14*
U.S. Cl. 55—267 **4 Claims**

1. Filter casing for an air conditioning system, comprising, a pair of parallel side walls, a rear wall, an upper wall, a bottom wall, and a front cover, wherein a fan is mounted inside said casing, said fan having a discharge side and an intake side, a first of said walls having an outlet opening therein and said intake side of said fan being in communication with an intake opening in said front cover through a passage within said casing, in said passage is mounted a filter apparatus for filtering intake air received through said intake opening for removing solid particles from said intake air, said casing being divided into a first and a second compartment by a pair of partitions in spaced apart relation parallel to each other and extending between said rear wall and said front cover and extending between said upper and bottom walls, said partitions defining a first channel therebetween, a first of said partitions having an aperture therein open to a space within and closed by plates to said second compartment, said space being open to said intake opening, a second of said partitions having aperture therein wherein said first channel is in communication with said first compartment, a temperature control apparatus for controlling the temperature of said intake air is mounted in said first compartment, said filter apparatus and said fan being located in said first compartment such that said intake air passes sequentially through said temperature control apparatus and said filter apparatus to said fan, the discharge side of said fan being connected to a discharge duct extending through said first channel and said space and opening into a second channel which is parallel to said first channel and within said second compartment, a plurality of absorbtion filter elements in said second



compartment for absorbing aggressive gases from said intake air, said second channel being defined by one of said plates and inlet sides of said filter elements, through said filter elements said intake air is permitted to flow from said inlet sides to output sides of said filter elements, which output sides define first and second passageways, said first passageway being defined between the output side of at least one of said filter elements and said first partition and said second passageway being defined between the output side of at least one of said filter elements and one of said side walls, said passageways are throughout their lengths in open communication with a rear space between said rear wall of the casing and sides of said filter elements which face said rear wall, in which rear space said outlet opening opens.

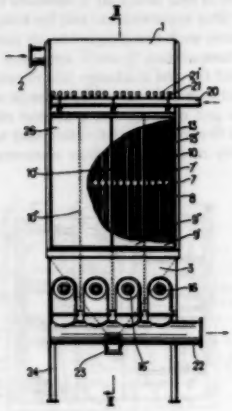
4,486,205
POWDERY DUST SEPARATING APPARATUS IN DUST COLLECTOR

Shinroku Nishiyama, 11-4, Komei-Cho, Takarazuka, Hyogo, Japan (665)

Continuation of Ser. No. 418,169, Sep. 14, 1982, Pat. No. 4,445,913. This application Feb. 15, 1984, Ser. No. 580,363
Claims priority, application Japan, Feb. 26, 1982, 57-28098[U]
The portion of the term of this patent subsequent to May 1, 2001, has been disclaimed.
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—302 **6 Claims**

1. A powdery dust separating apparatus comprising:
   - a. a dust collector body, said body having an interior space, said body including:
     - (1) means for separating said interior space into a filter chamber, and a gas chamber, laterally spaced from said filter chamber,
     - (2) means for directing powdery dust containing gas into the top end of said filter chamber, and
     - (3) means, at the lower end of said filter chamber, for directing powdery dust separated from said gas out of said filter chamber;
   - b. a plurality of mutually spaced filter members, each having spaced vertically extending outer faces covered by filter cloth and an opening in an end thereof between said outer faces;
   - c. a plurality of vertically extending separators separating

said gas chamber into a plurality of vertically extending gas passages, said gas passages each communicating with said opening of at least one of said plurality of filter members and including a gas outlet at the lower end thereof and an atmospheric air inlet opposite said gas outlet;



d. means for injecting compressed air separately into each of said filter members between said outer faces through said openings; and

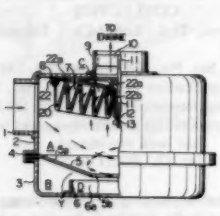
e. valve means in each of said plurality of gas passages, for alternatively respectively closing said gas outlet while opening said atmospheric air inlet and closing said atmospheric air inlet while opening said gas outlet.

4,486,206

CYCLONE TYPE AIR CLEANER

Susumu Miyakawa, Kariya; Hajime Akado, Anjo; Yoshihiro Taki, Nagoya; Kenji Hikida, Chiryu, and Toshiaki Nakayama, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 5, 1983, Ser. No. 511,007
Claims priority, application Japan, Jul. 7, 1982, 57-118824
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—337 **12 Claims**



1. A cyclone type air cleaner including:

a housing defining therein a swirling chamber for causing air to swirl therein to thereby centrifugally separate dust particles from the air,

wherein the improvement comprises:

a second swirling chamber disposed beneath the first-said swirling chamber;

a dust-collecting chamber provided around said second swirling chamber;

said housing having upper and lower end walls and a substantially cylindrical peripheral wall and being provided with an air inlet substantially tangential to said cylindrical wall;

an air outlet being formed in said upper end wall substantially coaxially therewith;

a downwardly converging frusto-conical member having a bottom end defining therein a central opening being provided in said housing substantially coaxially therewith and between said first and second swirling chambers so that said first and second swirling chambers are communicated with each other through said central opening;

an annular member of a diameter greater than that of said central opening being provided in said housing beneath said frusto-conical member and substantially coaxially therewith to define therein said second swirling chamber, said annular member cooperating with said housing to define therebetween said dust-collecting chamber;

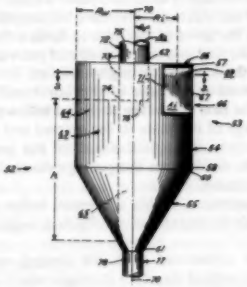
said annular member further cooperating with said frusto-conical member to define therebetween a substantially annular gap through which said second swirling chamber and said dust-collecting chamber are communicated.

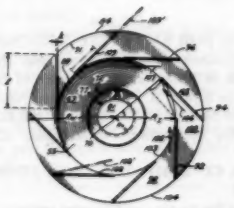
4,486,207

APPARATUS FOR REDUCING ATTRITION OF PARTICULATE MATTER IN A CHEMICAL CONVERSION PROCESS

Lloyd A. Baillie, Homewood, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Continuation of Ser. No. 275,567, Jun. 22, 1981, abandoned.
This application Dec. 20, 1982, Ser. No. 451,371
Int. Cl.³ B01J *8/24;* **B01D** *45/12;* **B04C** *5/04*
U.S. Cl. 55—455 **21 Claims**





1. In an apparatus for separating solid particles from a first fluid stream which includes a mixture of vapor and said particles, said apparatus including a body that defines a chamber defined by an interior cylindrical surface, inlet means for introducing said first fluid stream mixture into said chamber, fluid outlet means for withdrawing a second fluid stream substantially free of said particles from said chamber, and particle outlet means for withdrawing at least a portion of said particles that has been separated from said mixture in said chamber, the improvement comprising: said inlet means comprising a plurality of inlet passageway means wherein each said inlet passage-

way means is a means for conducting an inlet stream associated therewith along a substantially straight path tangentially into said chamber to induce said particles contained therein to move toward said interior cylindrical surface, said plurality of inlet passageway means is situated such that said path of one inlet stream will impinge upon the path of a downstream inlet stream associated with a downstream inlet passageway means to induce said particles contained in the impinging stream to be deflected away from said cylindrical surface, whereby said mixture is introduced into said chamber at a high velocity while reducing contact of said solid particles with said cylindrical surface so as to maintain separation efficiency while decreasing particle attrition.

4,486,208

CONDENSATE REMOVAL DEVICE FOR STEAM LINES AND THE LIKE

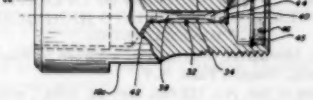
Constantine N. Stavropoulos, Addison, Ill., assignor to Engineering Resources, Inc., Chicago, Ill.

Continuation of Ser. No. 366,787, Apr. 9, 1982, Pat. No. 4,426,213, which is a continuation of Ser. No. 207,802, Nov. 17, 1980, abandoned. This application Oct. 11, 1983, Ser. No. 529,111

The portion of the term of this patent subsequent to Jan. 17, 2001, has been disclaimed.

Int. Cl.³ B01D *46/10*; F15D *1/02*

U.S. Cl. 55—466 **2 Claims**



1. In a device for drainage of condensate from steam systems without passage of live steam, the improvement comprising:

A. a body structure having a fluid flow conduit therethrough and including a generally cylindrical bore formed entirely within said body structure;

B. a first tubular nozzle frictionally mounted within said bore, said first nozzle having an internal constricted passageway therethrough communicating with said conduit, said first nozzle being interchangeable with at least a second tubular nozzle having external configuration likewise for frictional mounting within said bore, said second nozzle having an internal constricted passageway which is selected to be different in configuration than that of said first nozzle in order to enable variation in the constricted passageway suitable for operation with different steam pressures and different condensate drainage in said steam systems;

C. said conduit including a conical formation within said body structure, said conical formation opening outwardly from an entrance to said bore;

D. said first tubular nozzle including a terminal flange engaging said conical formation; and

E. said first nozzle including at least first and second generally coaxial and cylindrical constrictions formed within said passageway, the second of said constrictions having a somewhat larger diameter than the diameter of the first of said constrictions, said nozzle further including a first generally truncated conical bore joining said first and second constrictions, wherein the diameter of each end of said truncated bore is the same as the diameter of the respective constriction to which said respective end is joined in order to prevent sudden expansion of the condensate flowing from said first constriction and first conical bore into said second constriction.

4,486,209

RECOVERING CONDENSABLES FROM A HYDROCARBON GASEOUS STREAM

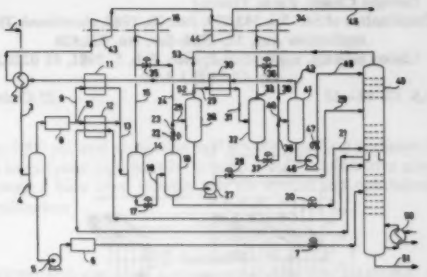
Cesare Fabbri; Gianfranco Bellitto, both of Milan; Giuseppe La Mantia, Cassano D'Adda, and Biagio Failla, Milan, all of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Filed Jun. 21, 1982, Ser. No. 390,501

Claims priority, application Italy, Jul. 7, 1981, 22781 A/81

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—18 **6 Claims**



1. A process for recovering condensable hydrocarbons from a gaseous mixed stream which contains them using an expansion means and a fractionating column, comprising the following stages:

(a) cooling (2) said gaseous mixture down to a temperature slightly above the temperature at which a hydrate is formed;

(b) dehydrating (6) the thusly obtained condensates and feeding to a fractionating column (49) only in liquid form;

(c) dehydrating (8) the thusly separated gas and cooling (11) thereof with attendant recovery of negative calories from the residual gas and from a lateral reboiler (12) and the fractionation column (49);

(d) separating (14) the gas from the condensates under a comparatively high pressure and expanding the gas in the first stage of an expansion means (16) down to an intermediate pressure corresponding to the pressure obtained in the head of the fractionation column (49);

(e) expanding said condensates under a comparatively high pressure through an expansion valve (17) down to a pressure which permits the liquid thus obtained to be fed to the fractionation column (49) while the thusly obtained gas (19, 22, 23) is admixed with the stream (24) emerging from the first stage of the expansion means (16);

(f) separating (26) the liquid from the gas of the mixture aforementioned and pumping (27) said liquid (29) to the fractionation column (49);

(g) admixing (52+53) the thusly obtained separated gas with the gas coming from the head of the fractionating column;

(h) cooling (30) the mixed gases of step (g) and recovering negative calories from the residual gas;

(i) separating (32) the gas from the condensates under an immediate pressure and feeding (33) it to the second stage of the expansion means wherein the gas is expanded down to a comparatively low pressure which is a function of the composition and the pressure of the gaseous mixture and of the degree of recovery required;

(j) expanding through a valve (37) the condensates under an intermediate pressure down to the outlet pressure of the expansion means (34) and admixing (38+39) the two streams;

(k) further separating under a low pressure (41) the condensates from the residual gas and feeding the condensates through a pump (46) to the head of the fractionating column (49); and

(l) heating the residual gas under a low pressure with recovery of negative calories and recompressing said gas (43);

provided that said fractionating column is fed by multiple inlet lines containing only liquid condensate feed, said condensates all having been separated from gases in separating units (14, 19, 26, 32, 41) upstream of the fractionation column.

4,486,210

METHOD AND APPARATUS FOR GAS LIQUEFACTION

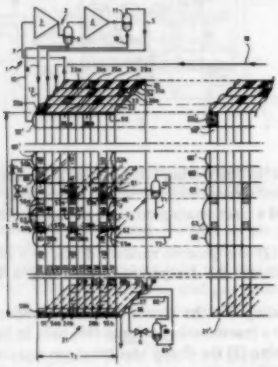
Pierre Gauthier, Fresnes, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Continuation of Ser. No. 343,599, Jan. 28, 1982, abandoned. This application Aug. 12, 1983, Ser. No. 522,626

Claims priority, application France, Feb. 5, 1981, 81 02202

Int. Cl.[3] F25J *3/00*

U.S. Cl. 62—23 27 Claims



1. In a method for liquefying a gas such as natural gas, utilizing at least one cycle fluid comprising a refrigerating mixture, with at least one first principal cycle fluid under a pressure referred to as low cold-producing pressure in counterflow heat exchange with, on the one hand, said gas which is to be liquefied and on the other hand with at least one heat-producing second principal cycle fluid under a pressure referred to as high pressure, with addition to said first principal cycle fluid under a low pressure and at an intermediate temperature of at least one secondary cycle fluid obtained by withdrawing a part in the liquid state from the said refrigerating mixture at said high pressure, which expanded to said low pressure before the said addition; the improvement comprising:

providing a heat exchanger comprising plates forming flat compartments of generally rectangular shape stacked in a transverse direction referred to as exchanger thickness and having another transverse dimension or exchanger width, and a longitudinal dimension or exchanger length, with a first plurality of compartments which are individually adjacent to at least a second plurality of compartments and having inlet means and outlet means, the said first plurality of compartments being provided with intermediate inlet means between said inlet and outlet means, opening laterally to the exchanger along one and the same intermediate region of the exchanger length and comprising, for each compartment of said first plurality of compartments, distribution means spread throughout the width of said compartment, the exchanger further comprising a third plurality of compartments individually adjacent to said first plurality of compartments;

supplying said first principal cycle fluid to said first plurality of compartments;

supplying said gas to said second plurality of compartments;

supplying said second principal cycle fluid to said third plurality of compartments; then expanding said second principal cycle fluid to said low pressure to constitute said first principal cycle fluid; and

supplying said second cycle fluid to said first plurality of compartments through said intermediate inlet means.

15. A heat exchanger of the kind comprising means designed, sized and arranged for liquefying a gas such as natural gas, including plates forming flat compartments of generally rectangular shape stacked in a transverse direction referred to as exchanger thickness and having another transverse dimension or exchanger width, and a longitudinal dimension or exchanger length; a first plurality of compartments which are individually adjacent to at least one second plurality of compartments, each compartment having inlet means and outlet means; the said first plurality of compartments being provided with intermediate inlet means located between said inlet and outlet means, opening laterally to the exchanger along one and the same intermediate region of the exchanger length and comprising, for each compartment off said first plurality of compartments, distribution means spread throughout the width of said compartment; and means for connecting said heat exchanger to an installation having elements designed, sized and arranged for liquefying a gas such as natural gas, including means for circulating a low-pressure first principal cycle fluid in said first plurality of compartments, means for supplying said intermediate inlet means with a secondary cycle fluid under said low pressure and means for circulating in said second plurality of compartments a heat-producing fluid which is at least one of said gas and a high-pressure second principal cycle fluid.

4,486,211

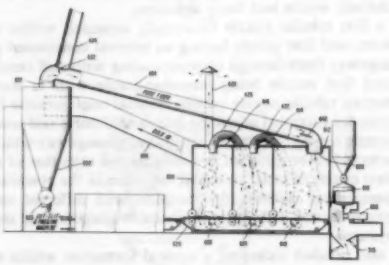
APPARATUS AND METHODS OF OPERATION FOR CONVERTING FLY ASH INTO HIGH QUALITY MINERAL WOOL

George J. Monaghan, Wayne, Pa., assignor to Energy Fibers Int'l Corp., Niagara Falls, N.Y.

Division of Ser. No. 313,486, Oct. 21, 1981, , which is a continuation-in-part of Ser. No. 303,172, Sep. 17, 1981, Pat. No. 4,399,544, which is a continuation of Ser. No. 163,489, Jun. 27, 1980,. This application Jan. 14, 1983, Ser. No. 457,907

Int. Cl.[3] C03B *37/05*

U.S. Cl. 65—1 16 Claims



1. A system for converting fly ash to mineral wool comprising:

a. furnace means for melting fly ash to produce a molten stream;

b. spinner means located below said furnace means to intersect said molten stream and convert said molten stream into fibrous strands and shot;

c. means for accumulating said fibrous strands including an input opening located adjacent said spinner means;

d. bin means located below said spinner means to receive said shot, said bin means being open to atmospheric pressure air;

e. air-tight chamber means for enclosing therewithin the molten stream and said spinner means, said chamber

means including an air-tight seal to said input opening of said means for accumulating, and an adjustable access for said shot to said bin means, which access also provides the only source of air to said chamber means; and

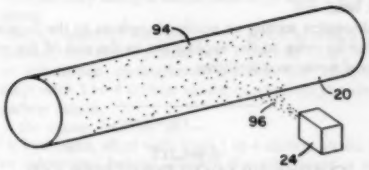
f. air-flow means for drawing atmospheric pressure air from said bin means, through said adjustable access, past said spinner means and into said means for accumulating to carry said fibrous strands into said means for accumulating, said adjustable access being operable to selectively limit the rate of flow of said air to thereby control the average weight of said fibrous strands entering said means for accumulating.

4,486,212

DEVITRIFICATION RESISTANT FLAME HYDROLYSIS PROCESS

George E. Berkey, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,525
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—2 **13 Claims**



1. A method of forming a high purity glass article comprising the steps of:

providing a substantially cylindrical mandrel,

rotating said mandrel,

directing at least a portion of a stream of glass particles toward said mandrel,

reciprocatingly moving said stream longitudinally with respect to said mandrel to build up a coating of said glass particles on said mandrel,

removing said mandrel to form a tubular porous glass preform, and

consolidating said porous glass preform to form a tubular glass article,

the improvement comprising depositing the first plurality of layers of glass particles on the surface of said mandrel at a deposition rate that is sufficiently low that no spiral pattern of deposited glass particles is visible, whereby the aperture forming surface of said tubular glass article is free from devitrification.

12. The method of claim 1 wherein the step of directing a stream of glass particles comprises providing a flame hydrolysis burner and feeding thereto a stream of oxygen and an amount of $SiCl_4$ vapor no greater than that amount which would be entrained in a stream of oxygen bubbled at a rate no greater than 0.05 slpm through a reservoir of $SiCl_4$ that is maintained at 37° C.

4,486,213

DRAWING LAMINATED POLARIZING GLASSES

William P. Lentz, Campbell; Thomas P. Seward, III, and George C. Shay, both of Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,510
Int. Cl.³ C03C *3/26*
U.S. Cl. 65—30.11 **12 Claims**

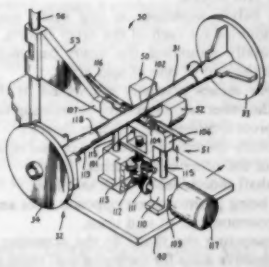
1. A method of making a polarizing glass including the steps of providing a core glass having silver-containing particles, cladding said core glass with a skin glass to form a laminated glass, said skin glass having a viscosity, when at the softening point temperature of the core glass, which is at least 50% less than that of the core glass, stretching the laminated glass at a temperature above the annealing point temperature of said core glass, at or above the softening point temperature of the skin glass, and at tensile stresses within the core glass exceeding 2000 psi, and elongating said silver-containing particles to an aspect ratio of at least 2:1 so as to provide a polarizing glass having a haze level suitably low for optical and ophthalmic applications.

4,486,214

METHODS OF AND APPARATUS FOR COLLAPSING A PREFORM TUBE INTO A PREFORM FROM WHICH LIGHTGUIDE FIBER IS DRAWN

Brian Lynch, Norcross, Ga.; John B. MacChesney, Lebanon, N.J.; Fred P. Partus, Marietta, Ga., and Jay R. Simpson, Fanwood, N.J., assignors to AT&T Technologies, Inc., New York, N.Y. and AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 8, 1983, Ser. No. 559,603
Int. Cl.³ C03C *25/02*
U.S. Cl. 65—3.12 **26 Claims**



1. A method of collapsing an elongated glass tube into a solid preform from which lightguide fiber is drawn, said method including the steps of:

supporting each end of the tube for rotation about a longitudinal axis thereof;

rotating the tube about the longitudinal axis by turning its supported ends; while

exposing an outer surface of each successive increment of length of the tube to a zone of heat having a temperature profile by causing relative motion between the zone of heat and the tube; and

causing the tube to be collapsed into a solid preform by applying continuously forces to the tube during a plurality of passes along the length thereof with said forces in each pass being applied to successive increments of length of the tube at a distance as measured along the longitudinal axis after each successive increment has been exposed to at least an initial portion of the zone of heat and with the point of application of said forces to each increment as

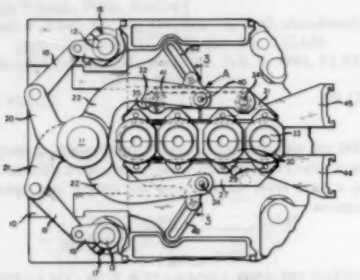
between successive ones of the plurality of passes becoming incrementally closer to the longitudinal axis.

4,486,215

QUADRUPLE CAVITY GLASS MOLD OPERATING APPARATUS

George W. Irwin, Holland, Ohio, and Eustace H. Mumford, Ottawa Lake, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 26, 1983, Ser. No. 498,383
Int. Cl.³ C03B 9/40
U.S. Cl. 65—360 **5 Claims**



1. In a glass forming apparatus wherein a plurality of charges of glass are delivered to parison molds at a parison forming station, are formed into parisons at the parison forming station and are thereafter transferred to a blow molding station where they are blown to shape, the combination comprising:

a machine base,

a pair of arms mounted on said base for swinging movement about a common axis, said arms having actuating portions extending beyond the pivot axis thereof,

three flank arm inserts,

four mold halves mounted on one insert and two mold halves mounted on each of the other inserts,

means pivotally mounting the insert carrying four mold halves to the end of one of said arms,

equalizer bar means pivotally connected to the center of each of the other two inserts for supporting the inserts for limited pivotal movement relative thereto,

means pivotally mounting the center of said equalizer bar to the end of the other of said arms,

a vertical shaft individual to each said arm,

said shafts being positioned on opposite sides and forwardly of said common axis of said arms,

means connnecting the shafts to the actuating portions of their respective arms for swinging said mold arms toward and away from one another to bring the inserts toward and away from one another and in turn close the mold halves into complementary relation to form mold cavities and move said mold halves apart for removal of parisons formed in the mold cavities, whereby the shaft on one side of said pivot axis actuates the mold arm on the opposite side of the pivot axis, with the clockwise rotation of the right hand shaft affecting the closing of the left side molds and inserts and the counterclockwise rotation of the left side shaft resulting in closing of the right side molds and inserts,

interengaging cam and follower means on said base and the insert carrying the four mold halves and the equalizer bar carrying the two inserts, for guiding said insert and bar in opening and closing movement of said mold halves such that upon initial opening movement of said arms the inserts are swung in an arc about said common axis to a predetermined angular position and upon further opening of said arms causing said inserts to move farther apart and rotate relative to the arms to maintain substantially the same predetermined angular position upon full opening of the mold halves.

4,486,216

METHOD FOR THE PROCESSING OF FECAL WASTE

Axel von Raven, Am Erdäpfelgarten 4, 8031 Gilching; Hans Buckl, Eberhardsweg 2, 8050 Freising-Tüntenhausen, and Ulrich Kröner, Jägerstrasse 35, 8980 Ravensburg 19, all of Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,307
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3225454
Int. Cl.³ C05F 3/00, 13/00
U.S. Cl. 71—8 **24 Claims**

1. A method for processing fecal waste for use as a fertilizer, which comprises the steps of:

A. mixing said fecal waste with a smectite clay enriched with:

1. microorganisms specific for the digestion of fecal material,

2. vegetable nutrients for said microorganisms,

3. lime, and

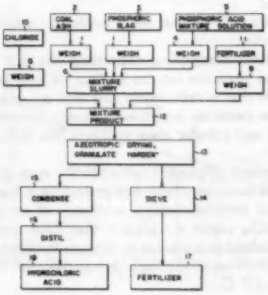
B. thereafter adding an acidic phosphate to the fecal waste shortly prior to the application to the soil of the treated fecal waste as a fertilizer.

4,486,217

COMPOUND SOLID FERTILIZER AND MANUFACTURING METHOD THEREOF

Taiji Arai, Abiko, and Saburo Kako, Yokohama, both of Japan, assignors to Denryoku-Chuo-Kenkyusho and Shigen-Kyokai, both of Tokyo, Japan

Filed May 17, 1982, Ser. No. 379,083
Claims priority, application Japan, May 22, 1981, 56-77858; May 22, 1981, 56-77859; May 22, 1981, 56-77860
Int. Cl.³ C05G 1/00
U.S. Cl. 71—25 **19 Claims**



1. A compound fertilizer with a low chlorine radical content, which is produced by the steps of: mixing a phosphoric acid solution with inorganic compound material matter consisting principally of iron, aluminum, magnesium, calcium and silica and others to form a slurry and produce a phosphate or silicophosphate gel-sol mixture and hydrogen, admixing a chloride fertilizer component with the slurry to obtain a mixture of the phosphate or silicophosphate gel-sol mixture, hydrochloric acid and hydrogen, and heating and drying the resulting product mixture to separate therefrom hydrochloric acid and to obtain a solid-solution hardened compound fertilizer of low chlorine radical content.

4,486,218

1-VINYLTRIAZOLE COMPOUNDS AND PLANT GROWTH AND FUNGICIDAL COMPOSITIONS

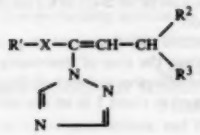
Wolf Reiser; Wilfried Draber; Karl H. Büchel, all of Wuppertal; Klaus Lürssen, Bergisch-Gladbach; Paul-Ernst Frohberger, Leverkusen, and Volker Paul, Solingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 112,891, Jan. 17, 1980, abandoned. This application Aug. 20, 1981, Ser. No. 294,603

Int. Cl.³ A01N *43/64;* C07D *249/08*

U.S. Cl. 71—76 36 Claims

1. 1-vinyltriazole compounds of the formula



(I)

wherein

R^1 is optionally halogen substituted alkyl with 1 to 4 carbon atoms

R^2 and R^3, together with the carbon atoms to which they are bonded, represent cycloalkenyl with 5 to 7 carbon atoms, or substituted cycloalkenyl wherein the substituent is alkyl with 1 to 4 carbon atoms; or cycloalkyl with 3 to 7 carbon atoms,

X is the group $—C(OR^4)R^5—$

R^4 is hydrogen, alkyl with from 1 to 4 carbon atoms, benzyl or substituted benzyl wherein the substituent is selected from halogen, or is the acyl radical $—CO—R^{10}$, or the carbamoyl radical $—CO—NR^{11}R^{12}$,

R^5 is hydrogen, alkyl with from 1 to 4 carbon atoms or benzyl,

R^{10} is alkyl with 1 to 4 carbon atoms, haloalkyl with 1 to 2 carbon atoms and 1 to 4 identical or different halogen atoms or phenyl,

R^{11} is hydrogen or alkyl with 1 to 4 carbon atoms, and

R^{12} is alkyl with 1 to 8 carbon atoms, haloalkyl with up to 4 carbon atoms and up to 5 identical or different halogen atoms, phenyl, or haloalkylmercapto with 1 to 2 carbon atoms and up to 5 halogen atoms,

and acid addition salts and metal salt complexes thereof.

19. Method for regulating plant growth, which method comprises applying to the plants or their habitat, an effective amount of a 1-vinyltriazole compound as claimed in claim 1.

28. Method for combating fungi, which method comprises applying to the fungi, or to a habitat thereof, a 1-vinyltriazole compound as claimed in claim 1.

4,486,219

6-OXABICYCLO[3.2.1]OCTANE DERIVATIVES AND COMPOSITIONS AND METHODS FOR CONTROLLING PLANT GROWTH

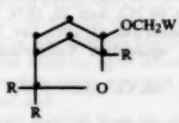
James E. Powell, Ripon, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 21, 1983, Ser. No. 487,326

Int. Cl.³ A01N *43/12;* C07D *307/00*

U.S. Cl. 71—88 11 Claims

1. A compound of the formula



wherein each R is independently a hydrogen atom or an alkyl group containing 1 to 4 carbon atoms; and W is an ethynyl group, a cyano group, a cyclohexenyl group or a phenyl group optionally substituted by 1 or 2 chlorine or fluorine atoms or methyl groups a cycloalkyl group containing 3 to 10 carbon atoms, a secondary alkyl group containing 3 to 10 carbon atoms, or a heterocyclic group selected from an imidazolyl, a triazolyl, thiadiazolyl, 2-quinolinyl, 1-isoquinolinyl, pyrrolyl, N-methylimidazol-2-yl, N-methylpyrazol-2-yl, isoxazolyl, oxazolyl, isothiazolyl, thiazolyl, thienyl, 5-methyl-2-furanyl, triazinyl, pyrimidinyl, or 2-pyridinyl group.

10. A method of regulating plant growth at a locus comprises applying to the locus or the plant an effective amount of a compound according to claim 1.

4,486,220

6-OXATRICYCLO[3.2.1.1^{3,8}]NONAN-4-OL ETHERS AND COMPOSITIONS AND METHODS FOR THE REGULATION OF PLANT GROWTH

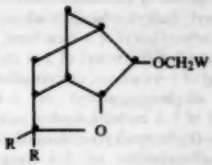
George B. Payne, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 18, 1983, Ser. No. 486,124

Int. Cl.³ A01N *43/12;* C07D *307/00*

U.S. Cl. 71—88 11 Claims

1. A compound of the formula



wherein each R independently is a hydrogen atom or an alkyl group containing from 1 to 6 carbon atoms; and W is an ethynyl group, a cyano group, a cyclohexenyl group or a phenyl group optionally substituted by 1 or 2 chlorine or fluorine atoms or methyl groups, a cycloalkyl group containing 3 to 10 carbon atoms, a secondary alkyl group containing 3 to 10 carbon atoms, or a heterocyclic group selected from an imidazolyl, a triazolyl, thiadiazolyl, 2-quinolinyl, 1-isoquinolinyl, pyrrolyl, N-methylimidazol-2-yl, N-methylpyrazol-2-yl, isoxazolyl, oxazolyl, isothiazolyl, thiazolyl, thienyl, 5-methyl-2-furanyl, 2-pyridinyl or 3-pyridazinyl group.

10. A method of controlling undesirable plant growth at a locus comprises applying to the locus or the plant an effective amount of a compound according to claim 1.

4,486,221

THIAZOLO[2,3-b]QUINAZOLONES AND THEIR USE FOR INFLUENCING PLANT GROWTH

Guenther Seybold, Neuhofen, and Bruno Wuerzer, Otterstadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

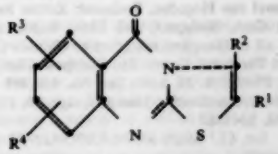
Filed Oct. 20, 1982, Ser. No. 435,368

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 3142727

Int. Cl.³ A01N *43/90;* C07D *513/04*

U.S. Cl. 71—90 9 Claims

1. A thiazolo[2,3-b]-quinazolone of the formula



where R^1 and R^2 independently of one another are each hydrogen, halogen, nitro, cyano, alkyl of 1–12 carbons, haloalkyl of 1–4 carbons, cycloalkyl of 3–6 carbons, alkoxy of 1–9 carbons, alkylthio of 1–9 carbons, thiophenyl, amino or alkylamino, dialkylamino, aminoalkyl or alkylaminoalkyl in which alkyl is of 1–4 carbons, alkanoylamino or haloalkylanoylamino of 2–5 carbons, carbamyl, dialkylcarbamido in which the alkyls are of 1–4 carbons, alkoxycarbonyl of 2–5 carbons, alkoxycarbonylalkyl of 3–6 carbons, unsubstituted or alkoxy-substituted alkoxycarbonyl of 2–6 carbons, sulfo, sulfino, alkylsulfonyl of 1–4 carbons, alkylsulfinyl of 1–4 carbons, chlorosulfonyl, phenylsulfonyl, sulfamyl, alkylaminosulfinyl of 1–4 carbons, alkylaminosulfonyl of 1–4 carbons, hydroxyalkylaminosulfonyl of 1–4 carbons, di(hydroxyalkyl)-aminosulfonyl of 1–4 carbons, morpholinylsulfony, alkylsulfonylamino of 1–4 carbons, alkoxycarbonylalkylamino of 3–6 carbons, or are each thien-2-yl, thiazol-2-yl, fur-2-yl, benzimidazol-2-yl, 2-chlorothien-4-yl, 2-methylthien-4-yl or 1-methylbenzimidazol-2-yl, and R^3 and R^4 independently of one another are each hydrogen, halogen, nitro, cyano, alkyl of 1–12 carbons, haloalkyl of 1–4 carbons, cycloalkyl of 3–6 carbons, alkoxy of 1–9 carbons, thiophenyl, amino or alkylamino, dialkylamino, aminoalkyl, alkylaminoalkyl or dialkylaminoalkyl in which the alkyls are of 1–4 carbons, alkanoylamino or haloalkanoylamino of 2–5 carbons, carboxyl, carbamyl, dialkylcarbamido, alkoxycarbonyl of 2–5 carbons, alkoxycarbonylalkyl of 3–6 carbons, unsubstituted or alkoxy-substituted alkoxycarbonyl of 2–6 carbons, sulfo, sulfino, alkylsulfonyl of 1–4 carbons, chlorosulfonyl, phenylsulfonyl, sulfamyl, alkylaminosulfinyl of 1–4 carbons, alkylaminosulfonyl of 1–4 carbons, hydroxyalkylaminosulfonyl of 1–4 carbons, di-(hydroxyalkyl)-aminosulfonyl, morpholinylsulfonyl, alkylsulfonylamino of 1–4 cargons, alkoxycarbonylalkylamino of 1–4 carbons, N-(w-dialkylaminoalkyl)-aminosulfonyl where alkyl is of 1–4 carbons or N-(w-sulfoalkyl)-aminosulfonyl where alkyl is of 1–4 carbons, with the proviso that R^3 is fluorine, cyano, alkyl of 2 to 9 carbon atoms, haloalkyl of 1–4 carbons, cycloalkyl of 3–6 carbons, alkoxy of 4 to 9 carbons atoms, alkylthio of 1–4 carbons, thiophenyl, amino, alkylamino, dialkylamino, alkanoylamino, haloalkanoylamino, sulfo, sulfino, alkylsulfonyl, alkylsulfinyl, chlorosulfonyl, phenylsulfonyl, sulfamyl, alkylaminosulfinyl, alkylaminosulfonyl, hydroxyalkylaminosulfonyl, di-(hydroxyalkyl)-aminosulfonyl, morpholinylsulfonyl, alkylsulfonylamino or alkoxycarbonylalkylamino, and R^4 has the above meanings, when R^1 is hydrogen, methyl, ethyl, halomethyl, aminomethyl, alkylaminomethyl or alkoxycarbonyl and R^2 is hydrogen, methyl or ethyl alkoxy or carbonylalkoxy, or an acid addition salt thereof.

8. A process for combating unwanted plant growth, wherein a thiazolo[2,3-b]-quinazolone of the formula I as set forth in claim **1**, or an acid addition salt thereof, is allowed to act on the plants and/or their location.

4,486,222

HERBICIDE COMPOSITION AND PROCESS FOR THE PREPARATION OF THE ACTIVE INGREDIENTS HERBICIDAL PHENYL CARBONATES

Jozsef Schwartz; Marya Hornyak nee Hamori; Janos Sagi, all of Budapest; Katalin Marmarosi nee Kellner, Biatorbágy; Erzsebet Radvanyi nee Hegedus, Budapest; Zoltan Szigeti, Budapest; Edit Cseh, Budapest, and Klara Bujtas nee Tolgyes, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

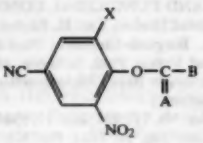
Filed Feb. 24, 1983, Ser. No. 469,301

Claims priority, application Hungary, Apr. 28, 1982, 1340/82; Apr. 28, 1982, 1341/82

Int. Cl.[3] **A01N** *37/34*; **C07C** *121/75*

U.S. Cl. 71—100 **10 Claims**

1. A compound of the formula (II)



wherein

A is oxygen or sulfur;

B is O-C_1 to C_4 alkyl, O-C_2 to C_6 alkenyl, O-C_6 to C_{10} aryl, O-C_1 to C_4 alkoxy-C_1 to C_4 alkyl, or S-C_1 to C_4 alkyl; and

X is chloro, bromo or iodo.

10. A process for the selective weed control in grain or vegetable crops which comprises the step of postemergently administering to said crop and effective amount of the compound of the formula (II) defined in claim **1** in an amount of 1 to 5 kg/ha.

4,486,223

DIPHENYL SULFONE COMPOUNDS, AND USE

Hiroyuki Konishi, Sakai; Naganori Hino; Hiroshi Matsumoto, both of Toyonaka, and Ryo Yoshida, Kawanishi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 318,999, Nov. 6, 1981, Pat. No. 4,374,662. This application Nov. 17, 1982, Ser. No. 442,375

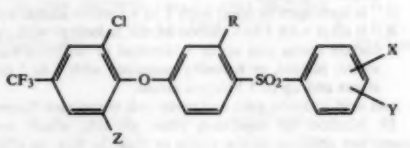
Claims priority, application Japan, Nov. 17, 1980, 55-162319

The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclaimed.

Int. Cl.[3] **C07C** *146/06*; **A01N** *41/10*

U.S. Cl. 71—103 **18 Claims**

1. A compound of the formula:



wherein R is a hydrogen atom or a lower alkoxy group, X and Y, being the same or different, are each a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy group, a carboxy(lower)alkoxy group or a lower alkoxycarbonyl(-lower)-alkoxy group and Z is a hydrogen atom or a halogen atom.

4,486,224

OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Werner Föry, Basel; Henry Martin, Allschwil, both of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

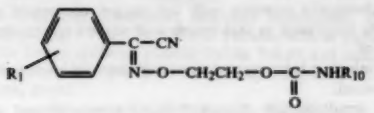
Division of Ser. No. 68,263, Aug. 20, 1979, Pat. No. 4,353,735. This application Jul. 14, 1982, Ser. No. 398,169

Claims priority, application Switzerland, Aug. 31, 1978, 9201/78

Int. Cl.[3] **A01N** *37/34*

U.S. Cl. 71—105 **5 Claims**

1. A method of protecting rice crops from the phytotoxic action of haloacetanilide herbicides, which comprises adding to the herbicide or applying to the locus of the crops, as antidote, a compound of the formula



wherein

R_1 is hydrogen or cyano, and

R_{10} is lower alkyl or phenyl optionally substituted by halogen or trifluoromethyl,

in a plant-protecting amount.

4,486,225

PRODUCTION OF HIGHLY REFLECTIVE METAL FLAKE

Donald H. Osborn, Suffern, and Richard J. Basley, Stony Point, both of N.Y., assignors to MPD Technology Corporation, Wyckoff, N.J.

Filed Jun. 7, 1982, Ser. No. 386,050

Int. Cl.³ B22F 9/00

U.S. Cl. 75—0.5 R **15 Claims**

1. A process for producing metal flake having improved reflectivity comprising wet ball milling a powder of the metal in a mobile liquid system containing a small amount of lubricant having dispersant properties to minimize welding of the metal particles, said lubricant comprising an organometallic compound being an organometallic substituted alcohol, said organometallic compound being at least partially soluble in the mobile liquid system.

4,486,226

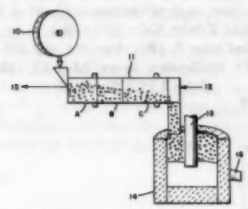
MULTISTAGE PROCESS FOR PREPARING FERROBORON

Clair E. Hildebrand, Whippany, and Franklin S. Wong, Florham Park, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 30, 1983, Ser. No. 556,492

Int. Cl.³ C21C 5/52

U.S. Cl. 75—11 **9 Claims**



1. A process for preparing ferroboron comprising the steps of:

(a) heating a mixture comprising

(i) a boron-containing material selected from the group consisting of boron oxides, boric acid, borax, colemanite, priceite, meyerhofferite, and mixtures thereof,

(ii) iron, iron oxides, and mixtures thereof,

(iii) a carbonaceous reducing agent selected from the group consisting of carbon black, activated carbon, coke, and mixtures thereof, and

(iv) a carbohydrate selected from the group consisting of sugars, starches, celluloses, and mixtures thereof at a temperature and for a time sufficient to produce a char that includes boron oxide;

(b) moving the char into a first reducing zone of an electric or arc plasma furnace, while heating it to a temperature sufficient to partially reduce the boron oxide;

(c) passing the material thereby produced to a second reducing zone, in which the material is further heated to a temperature sufficient to yield molten ferroboron; and

(d) returning to cooler zones any vapors that are generated, whereby boron values in the vapors are retained in the cooler zones.

4,486,227

MANUFACTURE OF A COMPOSITE TUBULAR PRODUCT

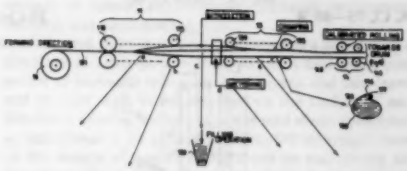
Michel Douchy, Solesmes; Jean-Louis Tranchant, Valenciennes, and Michel Jehan, La Flamengrie, all of France, assignors to Vallourec, Paris, France

Continuation of Ser. No. 237,805, Feb. 24, 1981,. This application Sep. 30, 1982, Ser. No. 429,725

Claims priority, application France, Feb. 26, 1980, 80 04194

Int. Cl.³ C21C 7/02

U.S. Cl. 75—53 **8 Claims**



1. Method of treating a metallurgical bath, comprising the steps of unwinding from a drum into said bath a predetermined length of a composite tubular product having a closed profiled tubular envelope, filled with an aggregated powder and having a flattened cross-section, said tubular envelope being made of a material non-reactive with respect to said bath, said aggregated powder being a compacted but porous reactive powder.

4,486,228

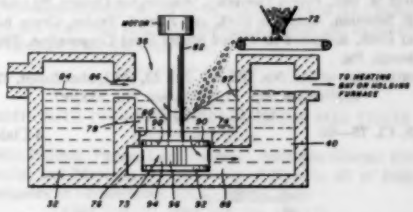
METAL SCRAP RECLAMATION SYSTEM

Robert J. Ormesher, Leechberg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 475,310, Mar. 14, 1983, abandoned. This application Jan. 23, 1984, Ser. No. 573,115

Int. Cl.³ C22B 21/00

U.S. Cl. 75—65 R **8 Claims**



1. An improved method of melting metal scrap in a molten melting media comprising the steps of:

(a) providing a body of molten melting media in a housing having an upper portion and a lower portion;

(b) adding a supply of metal scrap to said housing;

(c) introducing a supply of molten melting media to the upper portion of the housing; and

(d) initiating melting of the metal scrap by ingesting it and molten melting media downwardly in said housing by action of an impeller positioned in the lower portion, the

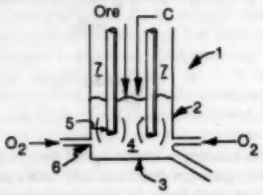
impeller having a top member having a circular opening in the center thereof and having a circular base member spaced below said top member and having blades extending from said top member to said base member, the scrap and melting media entering the opening in the top member in an axial direction and being propelled therefrom in a radial direction by use of said blades, the impeller positioned in the lower portion such that said top member cooperates with the lower portion to move the scrap and melting media from the upper portion through said impeller while substantially avoiding recirculation of the molten melting media within said housing to the upper portion.

4,486,229

CARBOTHERMIC REDUCTION WITH PARALLEL HEAT SOURCES

Robert L. Troup, Murrysville, and David T. Stevenson, Washington Township, Washington County, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 7, 1983, Ser. No. 472,680
Int. Cl.³ C22B *21/00*
U.S. Cl. 75—68 R **23 Claims**



1. A method of carbothermic direct reduction for producing an aluminum-silicon alloy comprising:

feeding a raw material mix comprising alumina, silica, and carbon to a reactor;

heating said mix in said reactor to an elevated temperature by an in situ combustion heat source located sufficiently contiguous to an electrical heat source to provide superimposed heating; and

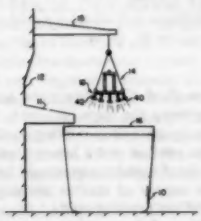
withdrawing said aluminum-silicon alloy from said reactor.

4,486,230

METHOD FOR SUPPRESSING FUME FROM A METAL POURING OPERATION

David M. Ball, Peters Township, Washington County, Pa.; Alton E. Sumsion, American Fork, and Zane S. Taylor, Orem, both of Utah, assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 286,395, Jul. 23, 1981, abandoned. This application Sep. 21, 1983, Ser. No. 533,897
Int. Cl.³ C21C *7/00*
U.S. Cl. 75—96 **3 Claims**



1. Method for suppressing the formation of metal oxide fume within a vessel into which the metal is poured in a molten state and within which metal vapors emitted from said molten metal can chemically combine with the oxygen content of atmospheric air present in said vessel, said method comprising the steps of:

(a) injecting inert gas under pressure into the interior of said vessel,

(b) simultaneously therewith injecting pressurized water into the interior of said vessel, and

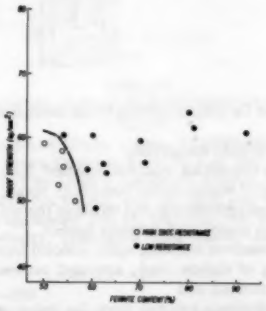
(c) the injection of inert gas occurring in such relation to the injection of water that the inert gas atomizes the water and conducts it in mechanically mixed relation into proximity with the metal vapors in said vessel.

4,486,231

DUAL PHASE STAINLESS STEEL SUITABLE FOR USE IN SOUR WELLS

Kazuo Fujiwara, Kobe; Haruo Tomari, Hyogo; Osamu Aritomi, and Nobuhiro Sato, both of Shimonoseki, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 9, 1983, Ser. No. 492,657
Claims priority, application Japan, May 13, 1982, 57-80695
Int. Cl.³ C22C *38/42*
U.S. Cl. 75—125 **2 Claims**



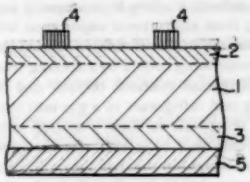
1. A dual phase stainless steel suitable for use in sour wells, consisting essentially of 0.06–0.20% C, ≦1.0% Si, 2.5–4% Mn, 20–27% Cr, 5–8% Ni, 2.5–4% Mo, 0.3–2% Cu, 0.1–0.25% N, 40–60% ferrite and the balance Fe and inevitable impurities.

4,486,232

ELECTRODE MATERIAL FOR SEMI-CONDUCTOR DEVICES

Mitsuo Nakatani, Yokohama; Haruhiko Matsuyama, Hiratsuka; Masaaki Okunaka; Hitoshi Yokono, both of Fujisawa; Tokio Isogai, Katsuta; Tadashi Saitoh, Tokyo, and Sumiyuki Midorikawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 17, 1983, Ser. No. 523,857
Claims priority, application Japan, Aug. 20, 1982, 57-143202
Int. Cl.³ H01B 1/02
U.S. Cl. 75—252 3 Claims



1. An electrode material for semi-conductor device, which comprises Ag powders, at least one metal of zirconium, hafnium, vanadium, niobium, and tantalum, an organic binder and an organic solvent.

4,486,233

NICKEL AND/OR COBALT CHEMICAL PLATING BATH USING A REDUCING AGENT BASED ON BORON OR PHOSPHOROUS

Pierre Josso, Issy les Moulineux; Pierre Lepetit, Saint Vrain; Pierre Mazars, Paris, all of France, and Marcel J. Massard, deceased, late of Cachan, France (by Yvette L. Massard, heiress), assignors to Office National d'Etudes et de Recherche Aerospatiales, Chatillon, France

Filed Jul. 29, 1983, Ser. No. 518,431
Claims priority, application France, Jul. 30, 1982, 82 13431
Int. Cl.³ C23C 3/02
U.S. Cl. 106—1.22 8 Claims

1. In a chemical plating bath for the autocatalytic plating of nickel or cobalt, wherein the plating bath comprises a salt of the metal to be deposited, at least one complexing agent to keep the metal in solution and to liberate the metal at the rate at which the plating reaction consumes it, a reducing agent containing a boron or phosphorus compound, and a stabilizing agent; the improvement which comprises

a water-soluble stabilizing agent selected from the group consisting of pyridine, cinnoline, nicotinic acid, cinnolic acid, 2-aminoquinoline, riboflavine, acridine, indole, pyrrole, furan and an ether of the formula

$$R—O—R^1$$

wherein R and R^1 each represent an aliphatic radical having at least 3 carbon atoms.

4,486,234

FIBER MATERIAL

Alfons K. Herr, Abornweg 3, D-7513 Stutenee-Spöck, Fed. Rep. of Germany

Filed Mar. 17, 1982, Ser. No. 358,924
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3110864
Int. Cl.³ C09D 5/16; C04B 31/00; C08K 3/32
U.S. Cl. 106—18.14 11 Claims

1. Fiber material usuable as reinforcement and/or stiffening material for an organic or inorganic binder used in the construction industry, comprising organic fibers selected from vegetable fibers, animal fibers, and organic chemical fibers and a tertiary phosphate attached to the organic fibers, wherein the phosphate is formed by the reaction of phosphoric acid (orthophosphoric acid) with a metal hydrogen carbonate or metal carbonate.

4,486,235

CLAY MINERAL SHEET

Osami Kamigaito; Haruo Doi, and Yoshiaki Fukushima, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Tokyo, Japan

Division of Ser. No. 417,067, Sep. 10, 1982, abandoned, which is a continuation-in-part of Ser. No. 234,002, Feb. 12, 1981, abandoned. This application Jun. 21, 1983, Ser. No. 506,222
Claims priority, application Japan, Feb. 18, 1980, 55-18644; Jul. 31, 1980, 55-105379
Int. Cl.³ C09K 3/00; B05D 1/18; B32B 5/16
U.S. Cl. 106—287.12 6 Claims

1. A process for the production of a strong composite sheet which comprises

preparing vermiculite exfoliated and crushed into thin leaves having a high aspect ratio,

stacking said thin leaves in layers to form a sheet by one method of natural sedimentation, filtration, compression molding and papermaking, and

immersing said sheet in a silane compound in a liquid state or dissolved in a non-polar solvent to allow said silane compound to permeate into said sheet among said thin leaves and to react with water absorbed on the surface of each thin leave causing the hydrolysis of said silane compound, so that silanol in the amount of 0.5 to 5% by weight based on the weight of said sheet is formed on and among said thin leaves for strongly bonding said thin leaves with one another through said silanol.

4,486,236

CERAMIC PIGMENT

John K. Olby, Wembley, England, assignor to HMR Group Limited, Staffordshire, England

Filed Mar. 2, 1984, Ser. No. 585,444
Claims priority, application United Kingdom, Mar. 10, 1983, 8306575
Int. Cl.³ C08K 3/22
U.S. Cl. 106—299 6 Claims

1. A grey ceramic pigment which consists of molybdenum sulphide, incorporated in zircon or a mixed molybdenum sulphide and molybdenum selenide incorporated in zircon.

2. A method of preparing a pigment as claimed in claim 1, which consists in firing a mixture of (1) reactive zirconia, (2)silica, (3) components capable of generating molybdenum sulphide, MoS_2, or a mixture of molybdenum sulphide and molybdenum selenide, under firing conditions and (4) a mineralizer, and removing free molybdenum sulphide and molybdenum selenide from the fired stain.

4,486,237

COMPOSITE PIGMENTS AND PROCESS FOR THEIR PREPARATION

Camillo Paffoni, Pogno; Luigi Balducci, Mortara; Giorgio Bottaccio, and Marcello Pieroni, both of Novara, all of Italy, assignors to Montefluous S.p.A., Milan, Italy

Filed Feb. 22, 1983, Ser. No. 468,121
Claims priority, application Italy, Feb. 22, 1982, 19786 A/82
Int. Cl.³ C04B 31/40
U.S. Cl. 106—308 Q 14 Claims

1. Composite ternary pigments consisting of from 70 to 95% by weight of a binary inorganic component of titanium dioxide and aluminum hydroxide and from 5 to 30% by weight of a substantially salified organic acid dye, the ratio by weight salified dye/titanium dioxide being comprised between 1:1 and 1:5 and the ratio by weight salified dye/aluminum hydroxide being at most 1:1, in which the organic acid dye, selected from the group consisting of azoic and quinophthalonic dyes con-

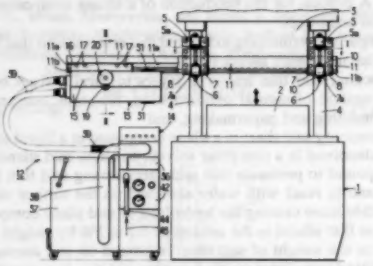
taining at least one carboxylic or sulphonic group, has been coprecipitated in form of a metal salt together with aluminum hydroxide, from an aqueous solution and/or dispersion of the acid dye and sodium aluminate, in the presence of titanium dioxide, at pH comprised between 9.5 and 10.5 and at a temperature of 40°–80° C.

4,486,238

METHOD AND APPARATUS OF CLEANING THE FACES OF PLASTIC FORMING METAL MOLDS

Kazuo Bando, No. 81-8, Tōyama, Momoyama-chō Fushimi-ku, Kyōto-shi, Japan

Filed Feb. 8, 1982, Ser. No. 347,056
Claims priority, application Japan, Feb. 12, 1981, 56-19773
Int. Cl.³ B29F *1/03*
U.S. Cl. 134—6 **9 Claims**



4. An apparatus for cleaning the opposed faces of plastic forming metal molds comprising:

a cleaning mechanism disposed movably between the opposed faces of the metal molds, said cleaning mechanism having

(a) flat brush members for removing flashes left on and stuck to the mold faces,

(b) a vibration-applying means for vibrating said brush members,

(c) an air feed means for flowing cooling air through said flat brush members to the mold faces, and

(d) a sucking means for sucking the thus removed flashes away from the mold faces; and

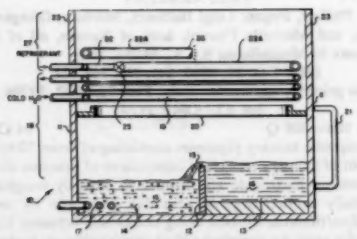
an operating mechanism for moving said cleaning mechanism.

4,486,239

VAPOR DEGREASING SYSTEM

Eugene R. du Fresne, Sierra Madre, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Apr. 22, 1983, Ser. No. 487,843
Int. Cl.³ B08B *5/00*
U.S. Cl. 134—11 **9 Claims**



1. A method of providing a barrier layer to prevent discharge of solvent vapors in a solvent vapor degreasing process or the like comprising:

(a) maintaining a liquid solvent bath in a tank;

(b) heating said liquid solvent bath to a temperature sufficient to provide a solvent vapor zone above the upper surface of said liquid solvent;

(c) cooling a first zone in the tank above said upper surface of said liquid solvent bath to a temperature sufficient to condense said solvent and to define an upper limit to said solvent vapor zone;

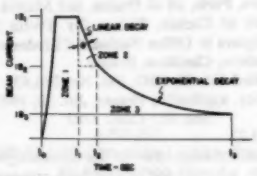
(d) cooling a second zone in the tank above said first zone to a temperature lower than the temperature of said first zone to provide a safety zone whereby any solvent vapor escaping from said solvent vapor zone will be condensed or maintained at a level defined by said second zone, said second zone being cooled by a cooling receptacle containing a refrigerant confined therein; and (e) subsequently releasing said refrigerant as a gas into the tank from said cooling receptacle to form a second vapor layer above said solvent vapor zone, said second vapor layer having a molecular weight lower than the molecular weight of said solvent vapor but higher than the molecular weight of air.

4,486,240

METHOD AND APPARATUS FOR HEAT TREATING

Peter D. Sciaky, Oak Lawn, Ill., assignor to Sciaky Bros., Inc., Chicago, Ill.

Filed Jul. 18, 1983, Ser. No. 514,866
Int. Cl.³ C21D *1/06*
U.S. Cl. 148—4 **5 Claims**



1. A method of surface hardening selected areas of a metal workpiece by means of a concentrated beam of electrons comprising the steps of:

generating a beam of electrons;

directing the said beam of electrons to the surface of the said workpiece;

causing the beam to be displaced in continuous fashion in a predetermined pattern over said selected area of metal workpieces;

repeating said predetermined pattern of beam displacement on the surface of said workpiece a preset number of times at a rate above twenty times per second;

controlling the electron beam current so that it reaches so high an initial value that the material of said selected surface area reaches a temperature above the transformation temperature and close to but below the melting point for said material within 200 milliseconds;

maintaining the current at this level for a preset time of approximately 200 milliseconds;

lowering the electron beam current to a second level in linear fashion during a second preset time of approximately 200 milliseconds;

allowing the current to drop exponentially to a third level during a third interval; and

interrupting the beam current at the end of the said third interval.

4,486,241

COMPOSITION AND PROCESS FOR TREATING STEEL

John J. Donofrio, Ambler, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 303,236, Sep. 17, 1981, abandoned. This application Aug. 26, 1982, Ser. No. 410,566
Int. Cl.³ C23F 7/10
U.S. Cl. 148—6.15 Z 37 Claims

1. An aqueous composition for the treatment of clean galvanized steel consisting essentially of:

(a) from about 0.3 to about 2.5 grams/liter of divalent zinc ion;

(b) from about 1.2 to about 1.7 grams/liter of divalent nickel ion;

(c) from about 15 to about 45 grams/liter of orthophosphoric acid;

(d) from about 1.0 to about 10.0 grams/liter of nitrate ion; and

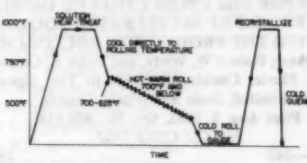
wherein the pH of the composition is adjusted into the range of about 3.0 to about 3.5 by the addition of an alkali metal hydroxide.

4,486,242

METHOD FOR PRODUCING SUPERPLASTIC ALUMINUM ALLOYS

Bennie R. Ward, and Richard F. Ashton, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Mar. 28, 1983, Ser. No. 479,256
Int. Cl.³ C22F 1/04
U.S. Cl. 148—11.5 A 5 Claims



1. A method for producing superplastic aluminum alloy sheet comprising the steps of:

a. providing an aluminum alloy slab of appropriate composition and thickness in an F temper condition;

b. solution heat treating the aluminum alloy slab of step (a) at a temperature above about 860° F. for from about ¼ to about 48 hours;

c. cooling the aluminum alloy slab of step (b) at a rate of between about 20° F./hr and about 100° F./hr to a temperature of between about 600° F. and about 700° F.;

d. hot/warm rolling the aluminum alloy slab of step (c), without prior overaging, at an entry temperature of between about 600° and 700° F. and at an exit temperature below about 600° F. to an intermediate gauge under conditions sufficient to impart sufficient strain energy and equivalent cold work as to yield a grain structure below about 20 μm after recrystallization;

e. cold rolling the product of step (d) to final gauge; and

f. rapidly recrystallizing the product of step (e).

4,486,243

METHOD OF MANUFACTURING RAILS

Nicole Lambert, Waremme; Pierre Simon, Montegnée, and René Conti, Athus, all of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum Voor Research In de Metallurgie, Brussels, Belgium and Metallurgique & Miniere de Rodange-Athus, SA., Rodange, Luxembourg

Filed Oct. 11, 1983, Ser. No. 540,523
Claims priority, application Luxembourg, Oct. 11, 1982, 84417
Int. Cl.³ C21D 9/04, 9/06
U.S. Cl. 148—12 R 8 Claims

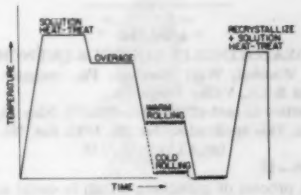
1. A method of manufacturing rails, comprising the sequential steps of hot rolling a rail in a hot rolling mill; at the outlet of the hot rolling mill, reducing the rail temperature to a value not lower than the temperature at which the pearlitic transformation begins in the rail head; after reaching this temperature, continuously moving the rail and rapidly cooling it to a temperature below about 650° C. so that at least 80% of the allotropic austenite-pearlite transformation has occurred in the rail at the end of rapid cooling; and then cooling the rail to ambient temperature.

4,486,244

METHOD OF PRODUCING SUPERPLASTIC ALUMINUM SHEET

Bennie R. Ward, Richmond, Va.; Suphal P. Agrawal, Rancho Palos Verdes, Calif., and Richard F. Ashton, Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Dec. 17, 1982, Ser. No. 451,108
Int. Cl.³ C22F 1/04
U.S. Cl. 148—12.7 A 5 Claims



1. In a method for producing superplastic aluminum sheet having a fine (<20 μm) and equiaxed grain structure comprising the steps of:

(a) providing an aluminum alloy plate of appropriate composition and desired thickness by hot rolling and stress relieving;

(b) solution heat treating the plate at a temperature higher than 860° F. for from about ¼ to 48 hours;

(c) slow cooling the product of step (b) to an average temperature of about 775°;

(d) overaging at about 775° F. for from about 2 to 8 hours;

(e) slow cooling the product of step (d) to a temperature of between about 450° to about 500° F. and optionally holding this temperature for up to about 4 hours;

(f) plastically deforming the product of step (e) from about 40 to about 80%; and

(g) rapidly recrystallizing at a temperature of between about 800° and 900° F., the improvement which comprises performing a first portion of the plastic deformation of step (f) by warm rolling at a starting temperature of between about 450° to about 500° F. and performing a second portion of the plastic deformation of step (f) by cold rolling at room temperature, said cold rolling being performed in a direction transverse to said warm rolling.

4,486,245

METHOD OF PRODUCING NICKEL BASE ALLOY STRUCTURE WITH NIAL COATING

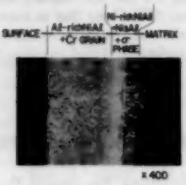
Mitsuo Chigasaki, Hitachi; Kiyoshi Otaka, Takahagi; Akira Okayama, Hitachi; Kenichi Onisawa, Hitachi, and Ko Soeno, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 29, 1981, Ser. No. 258,558
Claims priority, application Japan, May 2, 1980, 55-57854
Int. Cl.³ C22F 1/10
U.S. Cl. 148—13.1 7 Claims

1. A method of producing a structure having a main body made of a Ni base alloy and a surface layer of NiAl coating comprising the steps of:

forming an aluminide layer of Ni_2Al_3 on the surface of said main body by the diffusion and penetration of aluminum; and

subjecting the aluminide layer to heat treatment to change the aluminide layer to a monoaluminide layer of NiAl comprising an outer aluminum rich NiAl layer and an



inner nickel rich NiAl layer, while causing the thickness ratio of the nickel rich NiAl layer to the whole monoaluminide layer to be in the range between 20 and 40%.

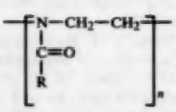
4,486,246

POLYOXAZOLINES IN AQUEOUS QUENCHANTS

Joseph F. Warchol, West Norriton, Pa., assignor to E. F. Houghton & Co., Valley Forge, Pa.

Continuation-in-part of Ser. No. 495,679, May 18, 1983, abandoned. This application Dec. 16, 1983, Ser. No. 561,980
Int. Cl.³ C21D *1/56*
U.S. Cl. 148—18 **8 Claims**

1. In the process of quenching which is useful in the heat treatment of metals wherein a metal is heated to an elevated temperature and said heated metal is then quenched in a bath comprising a liquid quenching medium to effect desirable metallurgical changes in the metal, the improvement which comprises using as said quenching medium an aqueous solution containing an effective cooling rate reducing amount of a nonionic, water-soluble or water-dispersible substituted oxazoline polymer having recurring units of the general formula



where R is an organic radical which does not significantly alter the nonionic and water-solubility and water-dispersibility characteristics of the polymer when said polymer is present in said concentrations, and n is an integer such as to provide said polymer with a molecular weight of from about 5000 to 1,000,000.

4,486,247

WEAR RESISTANT STEEL ARTICLES WITH CARBON, OXYGEN AND NITROGEN IMPLANTED IN THE SURFACE THEREOF

Gunes M. Ecer, Irvine, Calif.; Susan Wood, Pittsburgh, and Jan J. Schreurs, Plum Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 21, 1982, Ser. No. 390,716
Int. Cl.³ C23C *15/00*
U.S. Cl. 148—31.5 **10 Claims**

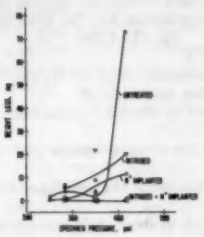
1. A steel member having a low friction, high wear resistance surface layer formed by the process comprising the steps of:

diffusing nitrogen into said surface by thermal means;

forming an oxygen containing film;

forming a carbon containing film on said surface;

then implanting nitrogen into said surface using accelerating beam voltages between about 10 and 400 KeV in a vacuum of about 10^{-4} to 10^{-3} Pa until a fluence of about 0.5×10^{17} to 2×10^{17} nitrogen ions/cm^2 is achieved; and wherein said implanting of nitrogen results in implanting



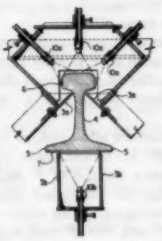
carbon and oxygen into said surface from said carbon containing film and said oxygen containing film.

4,486,248

METHOD FOR THE PRODUCTION OF IMPROVED RAILWAY RAILS BY ACCELERATED COOLING IN LINE WITH THE PRODUCTION ROLLING MILL

Robert J. Ackert; Robert W. Witty, and Peter A. Crozier, all of Sault Ste. Marie, Canada, assignors to The Algoma Steel Corporation Limited, Sault Ste. Marie, Canada

Filed Aug. 5, 1982, Ser. No. 405,514
Int. Cl.³ C21D *1/02*
U.S. Cl. 148—145 **29 Claims**



1. A method for heat treating railroad rails to produce a metallurgical structure composed primarily of finely spaced pearlite in the rail head of railroad rails, by the accelerated cooling of railroad rails from an initial temperature above the austenite to ferrite transformation temperature, comprising the steps of:

(a) subjecting the head portion of a rail to intermittent forced cooling by passing said rail through a series of alternating cooling headers utilizing a liquid cooling medium and air zones, in such a manner that the near surface region of said rail is maintained essentially above the martensite transformation temperature, during said intermittent forced cooling, and wherein cooling of the web portion of said rail is minimized during said intermittent forced cooling; and

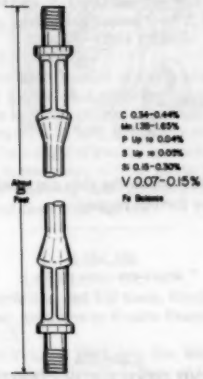
(b) terminating the application of said liquid cooling medium when said rail head has reached a predetermined cooling stop temperature prior to the completion of the austenite to pearlite transformation, said predetermined cooling stop temperature being in the range 850° F. to 1200° F.

4,486,249

METHOD OF MAKING CLASS D SUCKER RODS

Robert T. Woodings, 134 South Dr., Fox Chapel Borough, Pa. 15238

Continuation of Ser. No. 396,702, Jul. 9, 1982,. This application Jan. 14, 1983, Ser. No. 458,061
Int. Cl.³ C21D 1/10
U.S. Cl. 148—154 10 Claims



1. The process of manufacturing a high-strength sucker rod from a carbon steel which comprises heating to a normalizing temperature by means of electric induction an elongated rod of steel suited for the manufacture of a sucker rod, said steel consisting essentially of about:

0.34 to 0.44 percent carbon,
1.35 to 1.65 percent manganese,
up to 0.04 percent phosphorus,
up to 0.05 percent sulphur,
0.15 to 0.30 percent silicon,
0.07 to 0.15 percent vanadium,
balance iron and incidental impurities,

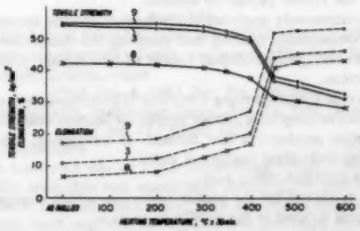
and then permitting said rod to cool in air while so supporting and rotating said rod as to prevent warping.

4,486,250

COPPER-BASED ALLOY AND METHOD FOR PRODUCING THE SAME

Takashi Nakajima, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 399,120, Jul. 16, 1982, abandoned. This application Sep. 19, 1983, Ser. No. 533,160
Claims priority, application Japan, Jul. 23, 1981, 56-115585
Int. Cl.³ C22C 9/02; C22F 1/08
U.S. Cl. 148—433 2 Claims



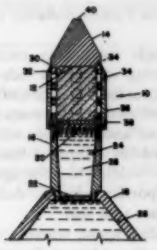
1. An annealed copper-based alloy which consists essentially of 1.7% to 2.5% of tin, 0.03% to 0.35% of phosphorus, 0.11% to 0.39% of nickel, and remainder of copper and unavoidable impurities, the percentage ratio being all by weight, wherein said alloy has a crystal grain size of 10 microns or below and wherein said alloy exhibits a tensile strength of about 45 Kg/mm^2 or greater, an elongation of about 6% or greater, an electrical conductivity of about 30% IACS or greater and an ultimate reduction ratio of from about 20% to about 60%.

4,486,251

CONTACT FUZE FOR MINE MUNITIONS

Frank H. Bell, Logan, Utah, assignor to Thiokol Corporation, Chicago, Ill.

Division of Ser. No. 318,663, Nov. 5, 1981, Pat. No. 4,426,932. This application Jun. 24, 1983, Ser. No. 507,376
Int. Cl.³ C06B 45/00
U.S. Cl. 149—2 3 Claims



1. A liquid explosive desensitized by a solvent selected from the group consisting of hydrocarbons, halocarbons and admixtures thereof and filled with a rough, dense mineral grit, evaporation of said solvent resulting in arming of said liquid explosive.

4,486,252

METHOD FOR MAKING A LOW NOISE CABLE

Richard B. Lloyd, Sunnyvale, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 195,268, Oct. 8, 1980, abandoned. This application Sep. 4, 1981, Ser. No. 299,428
Int. Cl.³ H01B 13/22
U.S. Cl. 156—51 6 Claims

1. A method for making a low noise cable comprising the steps of:

providing a conductor;
surrounding the conductor with a dielectric;
surrounding the dielectric with conductive matter; and
encapsulating electrical shielding means within the conductive matter, said shielding means being spaced from the dielectric.

4,486,253

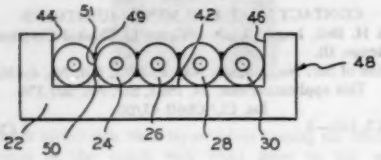
METHOD OF MAKING A MULTICONDUCTOR CABLE ASSEMBLY

Richard J. Gunia, New Berlin, Wis., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 202,530, Oct. 31, 1980, Pat. No. 4,356,345. This application Jun. 25, 1982, Ser. No. 391,907

Int. Cl.³ B32B *31/24*; H01B *7/08*

U.S. Cl. 156—51 **3 Claims**



1. A method to form a multiconductor cable comprising the steps of:

a. providing multiple conductors, each having a solvent-weldable insulating sheath, in side-by-side contiguous relationship along at least a portion of their mutual lengths to form a flat profiled first cable portion having substantial interfacing contact areas between adjacent sheaths;

b. applying longitudinally disposed beads of a combination filler and solvent welding bonding agent to the sheaths of said first cable portion adjacent each side of each said interfacing contact area; and

c. curing said bonding agent; whereby to form a multiconductor cable having substantially unbonded interfacing contact areas.

4,486,254

HEAT-ACTIVATED PATCH OR REPAIR COMPOSITION AND SYSTEM FOR METAL

Oliver Zinimon, 1495 W. River Rd. South, Elyria, Ohio 44035

Filed Feb. 3, 1983, Ser. No. 448,696

Int. Cl.³ B32B *35/00*

U.S. Cl. 156—94 **10 Claims**

9. A heat-activated patch or repair system for a metal surface or object capable of maintaining its shape at a temperature of about 500° F., comprising from about 3 to about 5 weight percent of an alumina-containing air set mortar comprised of alumina, clay and grog and having a Pier test of about 700 p.s.i., from about 8 to about 12 weight percent of ironore and from about 83 to about 89 weight percent of a fibrous adhesive comprising silicate, soda and asbestos fibrous cement in intimate association with asbestos cloth.

4,486,255

METHOD AND MACHINE FOR REMOVING AT LEAST ONE LAYER OF REINFORCING ELEMENTS FROM A BREAKER OR BELT OF A RUBBER TIRE

Roger Crommelynck, Deerlijk, and Eddy Quartier, Wevelgem, both of Belgium, assignors to N. V. Bekaert S. A., Zwevegem, Belgium

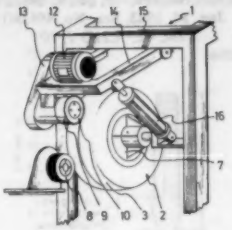
Filed Sep. 28, 1983, Ser. No. 536,745

Claims priority, application Belgium, Oct. 5, 1982, 1/10601

Int. Cl.³ B32B *35/00*; B29H *21/01*

U.S. Cl. 156—98 **3 Claims**

1. A method for removing at least one layer of reinforcing elements, such as steel cords, from a breaker or belt located between the tread area and the carcass of a rubber tire, whereby first the tread area of the tire is removed down to the layer of reinforcing elements by rasping off the tread area, characterized in, that afterwards each reinforcing element (4), for example steel cord, of the layer to be removed is cut in at



least one place, after which the thus cut reinforcing elements (4) are removed by further rasping.

4,486,256

METHOD AND DEVICE FOR CONTINUOUSLY APPLYING A DECORATIVE STRIP TO A RUBBER PROFILE OR SECTION

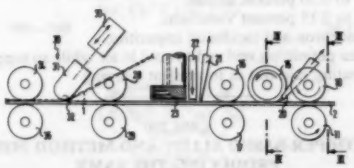
Jürgen Kranz, Lindau, Fed. Rep. of Germany, assignor to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 2, 1983, Ser. No. 529,027

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1982, 3232700

Int. Cl.³ B32B *31/18*

U.S. Cl. 156—257 **9 Claims**



1. Method for continuously applying a decorating strip to a rubber profile or section wherein the decorative strip is inserted into a corresponding groove-shaped recess formed in the surface of the rubber profile or section, which comprises

(a) exactly and continuously guiding the rubber profile or section;

(b) milling the recess for the decorative strip into the surface of the rubber profile or section;

(c) continuously applying the adhesive into the recess; and

(d) continuously feeding and pressing the decorative strip into the groove-shaped recess of the rubber profile or section.

5. Device for performing a method of continuously applying a decorative strip to a rubber profile or section comprising a continuous production line formed, in succession, with the following individual functional units:

(a) an insertion roller pair;

(b) a guide rail for the profile or section which engages in a recess formed in the profile or section;

(c) a laterally contacting guide and pressure roller;

(d) a profiling milling cutter;

(e) a hot air blower;

(f) an adhesive-applicating nozzle; and

(g) a laminating device for the decorative strip.

4,486,257

ADHESIVE FOR AND METHOD FOR ADHESION OF CERAMIC ARTICLES

Yoshihiro Ebata, Kawanishi; Saburo Kose, Ikeda; Makoto Kinoshita, Ikeda, and Tsutomu Ueno, Ikeda, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,476

Claims priority, application Japan, Dec. 2, 1981, 56-194867

Int. Cl.³ C09J 1/00

U.S. Cl. 156—325 2 Claims

1. A method for the adhesion of two ceramic articles both formed of silicon nitride, said method comprising interposing between said two ceramic articles an adhesive comprising as active components 40% to 30% by weight of calcium fluoride and 60% to 70% by weight of kaolin, and heating said adhesive to a temperature in the range of from about 1000° C. to about 1500° C. thereby allowing said adhesive to have adhesive strength of not less than 1000 kg/cm².

4,486,258

LABELING DEVICE

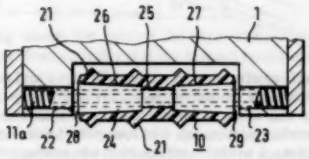
Kurt Schrotz, Beerfelden, and Ulf Koch, Eberbach, both of Fed. Rep. of Germany, assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Feb. 16, 1983, Ser. No. 466,860

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3207053

Int. Cl.³ B65C 9/30, 11/02

U.S. Cl. 156—384 6 Claims



1. A labeling device for printing, dispensing, and applying adhesive labels which, during each operating cycle, prints an adhesive label and transports it into a dispensing position below an applicator roll mounted for rotation on an axle elastically deformable under the influence of forces present when the labels are applied, characterized in that the applicator roll (10) is made of thermoplastic or duroplastic material, that the applicator roll (10) is supported on the axle (11, 11a, 11b, 11c) in a central region (25) of its longitudinal extension and that on either side of the central region (25) there follow axle bore regions (26, 27) extending up to the end faces (28, 29) of the applicator roll (10), in which axle bore regions the applicator roll (10) surrounds the axle (11, 11a, 11b, 11c) with a clearance.

4,486,259

BEAD LOCK MEANS FOR TIRE-FORMING DRUM

Nobuhiko Irie, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

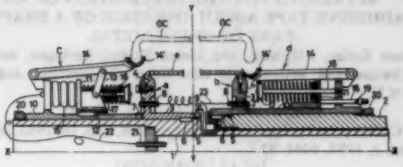
Filed Jun. 4, 1982, Ser. No. 384,954

Claims priority, application Japan, Jun. 12, 1981, 56-90426

Int. Cl.³ B29H 17/26

U.S. Cl. 156—398 3 Claims

1. A bead lock device for a tire-forming drum, comprising mutually separable and engageable shafts, a left and a right bead lock member, each bead lock member comprising of segments, each segment having one end pivotably connected to one of said shafts and the other end adapted to expand and contract in diameter in the radial direction and to hold the bead portion of a green case in substantially cylindrical form, a right and a left slide member adapted to move in the axial direction of said shafts and each connected to said segments of said left and said right bead lock members respectively through a link member for expanding and contracting the diameter of said segments in the radial direction through a link mechanism, a one-chamber-type diaphram fluid pressure cylinder for moving said slide members in the direction of expansion of diameter



of said segments, a spring for moving said slide members in the direction of contraction of said segments, and a rod and an adjusting nut for controlling the movement of each slide member.

4,486,260

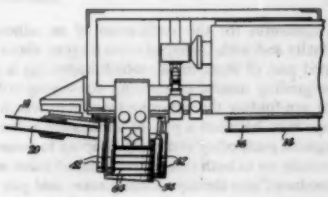
FABRICATING MACHINE AND PROCESS

Claude W. Schaefer, Fort Lauderdale, Fla., assignor to Atco Rubber Products, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 202,161, Oct. 30, 1980, abandoned. This application Jan. 25, 1982, Ser. No. 342,437

Int. Cl.³ B31C 1/00, 5/00

U.S. Cl. 156—429 11 Claims



10. A machine for fabricating wire-reinforced duct by welding a first duct wall strip to a second duct wall strip with one or more reinforcement elements therebetween, comprising:

a frame;

a helically grooved mandrel, said mandrel removably connected to said frame;

reinforcement element feeding means for feeding said reinforcement element onto said mandrel, said reinforcement element feeding means connected to said frame;

a first duct wall strip feeding means for feeding said first duct wall strip onto said mandrel, said first duct wall strip feeding means connected to said frame;

a second duct wall strip feeding means for feeding said second duct wall strip onto said mandrel, said second duct wall strip feeding means connected to said frame;

a first driving means for driving said reinforcement element and said first duct wall strip about said mandrel, said first driving means connected to said frame;

a welding means for welding said first duct wall strip to said second duct wall strip enveloping said reinforcement element therebetween, said welding means connected to said frame;

a second driving means for moving said reinforcement element, said first duct wall strip and said second duct wall strip over said welding means, said second driving means connected to said frame;

a motor means for propelling said first driving means and

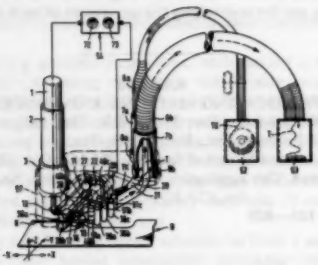
said second driving means, said motor means connected to said frame.

4,486,261

APPARATUS FOR THE APPLICATION OF AN ADHESIVE TAPE ABOUT THE EDGE OF A SHAPED PART OF SHEET METAL

Hans Koller, Allschwil, and Heinz Zingel, Beringen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 8, 1984, Ser. No. 578,165
Claims priority, application Switzerland, Feb. 16, 1983, 86/83; Dec. 2, 1983, 6464/83
Int. Cl.³ B61F 31/00
U.S. Cl. 156—461 24 Claims



1. An apparatus for the application of an adhesive tape, longitudinally and with U-shaped cross section, about the edge of a shaped part of sheet metal, which apparatus is provided with tape-guiding means, comprising conveying rollers, and means for pre-folding the adhesive tape from which the pre-folded tape runs between a pair of application rollers spring-biassed against each other and being adapted to press the tape simultaneously on to both sides of said shaped sheet metal part being introduced into the tape-folding zone, said pair of application rollers and said means for pre-folding the adhesive tape being adapted for being swivelled, against the restoring bias of a spring, about a common swivel axis extending parallel with the axes of said application rollers.

4,486,262

CASSETTE LOADING MACHINE

George M. Woodley, Shrewsbury, Mass., assignor to King Instrument Corporation, Westboro, Mass.

Filed Oct. 12, 1982, Ser. No. 433,814
Int. Cl.³ B65H 21/00
U.S. Cl. 156—502 33 Claims

1. A machine for loading a use tape into a C-Zero cassette having:

a cassette-storing magazine for storing C-Zero cassettes to be loaded with tape, said magazine having a bottom discharge opening; and

a cassette-handling mechansim for (a) feeding C-Zero cassettes from said magazine to a selected loading position one at a time, (b) holding a cassette in said loading position, and (c) discharging a cassette from said loading position after said cassette has been loaded with a use tape;

wherein said cassette-handling mechanism is characterized by:

a movable cassette support means for supporting a stack of cassettes in said magazine;

a movable clamp means for releasably clamping the next-to-lowest cassette in said stack in said magazine at a selected point;

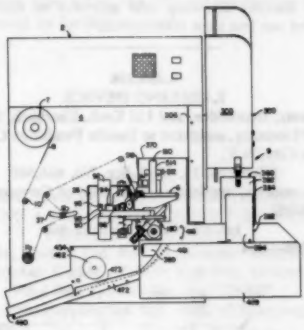
first actuating means for operating said clamp means;

a conveyor for transporting C-Zero cassettes discharged from said magazine to said selected loading position;

guide means for directing cassettes discharged from said magazine onto said conveyor;

second actuating means for moving said movable cassette support means lengthwise of said magazine through a first top position, a second intermediate position and a third bottom position, said first position being above said selected point, said second position being below but close to said selected point, and said third position being substantially below both said selected point and said bottom discharge opening; and

means for operating said first and second actuating means so that (1) a stack of cassettes in said magazine will be supported by said cassette support means at said first position,



(2) said cassette support means will move said stack downward to said second position, (3) said clamp means will clamp the next-to-lowest cassette in said stack, (4) said cassette support means will lower the lowermost cassette in said stack to said third position whereby said lowermost cassette will be released to said conveyor via said guide means, (5) said cassette support means will engage said next-to-lowest cassette and will raise said next-to-lowest cassette to said first position, and (6) said clamp means will release said next-to-lowest cassette as or before said next-to-lowest cassette is engaged by said movable cassette support means so that said next-to-lowest cassette may be raised by said cassette support means up to said first position, and thereafter repeating steps (2) and (6);

whereby cassettes will be released one at a time from said magazine to said conveyor.

4,486,263

SUPPORT FOR A TAPE WHICH IS ADHESIVE ON ONE OR BOTH OF ITS FACES

Peregrin Monzo Gomez, Avda. de Suecia, n°21 Valencia, Spain

Filed Apr. 11, 1983, Ser. No. 483,512
Claims priority, application Spain, Apr. 15, 1982, 264528
Int. Cl.³ B32B 31/04, 35/00
U.S. Cl. 156—523 7 Claims

6. A support for a tape which is adhesive on at least one face, comprising:

(A) a housing having a wall, an exit being defined in the wall for exiting a tape from inside the housing;

(B) holding means on the housing wall and spaced apart from the exit for supporting a roll of the tape;

(C) guide means on the housing wall for guiding the tape along a path from the roll to the exit;

(D) floating roller means for positioning the tape between the guide means and the exit, the floating roller means comprising:

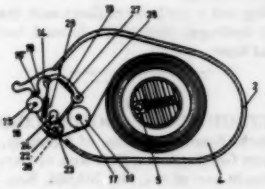
(1) first and second grooved portions on the housing wall, each having a respective groove defined therein, the

respective grooves being spaced apart from each other, the first grooved portion further having at least one tooth defined therein extending into the respective groove;

(2) a floating roller having a striated pin for fitting between the respective grooves of the first and second grooved portions and for engaging the tooth, the floating roller being movable between an outward position for positioning the tape in an outward position in the exit and an inward position for positioning the tape in an inner position inward and spaced apart from the exit; the tooth causing the floating roller to turn as it moves between the outward position and the inward position; and

(3) roller urging means for urging the floating roller toward the outward position;

(E) a pressure roller on the housing wall and disposed at the exit for engaging the tape as it exits and for pressing an adhesive face of the tape against a surface for adhering the tape to the surface, the pressing of the tape by the pressure roller causing the floating roller to move toward the inward position; and



(F) cutting means for cutting the tape within the housing when the floating roller is in the inward position, comprising:

(1) first and second opposite guides on the housing wall and spaced apart from each other;

(2) a movable blade movably mounted on the first and second guides and having a free end for cutting the tape along the path between the floating roller and the pressure roller, the blade being movable between a retracted position away from the exit and a protruding position toward but inward from the exit;

(3) blade urging means for urging the blade toward the retracted position; and

(4) an actuating button for moving the blade from the retracted position to the protruding position for cutting the tape when the floating roller is in the inward position, the actuating button being pivotally mounted on the wall and having a driving part for moving the blade to the protruding position when the button pivots and an end for protruding outside the wall and for receiving a force for causing the button to pivot.

4,486,264

DOOR FRAME ASSEMBLY MACHINE

Gary M. McKernan, 10/12 Opala St., Regency Park, South Australia 5010, Australia

Filed Jul. 18, 1983, Ser. No. 514,461

Claims priority, application Australia, Apr. 18, 1983, PF8934

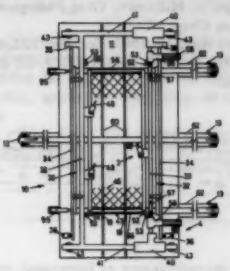
Int. Cl.³ B23P *19/00*

U.S. Cl. 156—538 **10 Claims**

1. A door frame assembly machine for assembly of a pair of stiles to a core sub-assembly which comprises a pair of end rails and an expandable lattice spacer core interconnecting the rails, comprising

a table, clamps on the table engageable with said rails, and clamp separating means comprising separating cylinders coupled to said clamps and operable to separate said clamps (and thereby the rails),

a pair of spaced parallel stiles, means to locate the stiles with respect to the rails, and



securing means on the table for securing the stile ends to the rail ends to thereby form a rectilinear frame, and further securing means for securing the sides of the lattice spacer panel to the stiles.

4,486,265

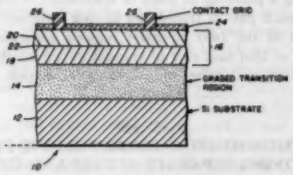
PROCESS OF MAKING THIN FILM MATERIALS FOR HIGH EFFICIENCY SOLAR CELLS

Roger G. Little, Bedford, Mass., assignor to Spire Corporation, Bedford, Mass.

Continuation of Ser. No. 209,541, Nov. 24, 1981, abandoned. This application Jul. 7, 1982, Ser. No. 396,128

Int. Cl.³ C30B *25/02*

U.S. Cl. 156—606 **3 Claims**



1. A process for expitaxially growing a thin film on a low-cost large grain silicon layer, wherein said thin film has a lattice constant differing from that of said silicon layer, comprising:

(a) forming a low cost metallurgical grade silicon substrate;

(b) forming a graded transition region on said substrate by successively depositing, by evaporation, a plurality of thin amorphous layers of material having a lattice constant approximating that of said thin film and successively pulsing each said plurality of deposited layers with a large-area electron beam;

(c) said successive pulsing of each of said plurality of deposited layers effecting zone refining and mixing of adjacent layers at their interfaces, resulting in a higher percentage of said material with said lattice constant approximating that of said thin film at the surface of said graded transition region than adjacent said silicon substrate;

(d) stitching said evaported layers of said material at selected points to said substrate by impinging high energy ions directed through said layers and into said substrate at said selected points;

(e) epitaxially growing a thin film having said lattice constant differing from that of said silicon layer on said transition region by depositing said thin film on said graded transition region by a low-temperature process; and

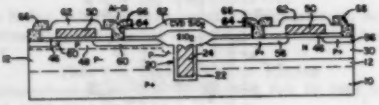
(f) exposing said deposited thin film to a large-area pulsed electron beam to form a single crystal.

4,486,266

INTEGRATED CIRCUIT METHOD

Tadanori Yamaguchi, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 12, 1983, Ser. No. 522,886
Int. Cl.³ H01L *21/306, 7/44;* C23F *1/02;* B05D *5/12*
U.S. Cl. 156—643 14 Claims



1. Process for manufacturing an integrated circuit including a plurality of transistors, comprising the steps of:

a. forming a monocrystalline semiconductor substrate of P or N type conductivity with an epitaxial layer of the same type of conductivity;

b. etching isolation trenches completely through the epitaxial layer into the substrate to form with each trench two epitaxial regions which are separated from each other by said trench;

c. coating the inner surface including the bottom of the trenches with a layer of semiconductor oxide to provide coated trenches;

d. depositing a filling of unoxidized polycrystalline semiconductor material within the coated trenches on the layer of semiconductor oxide to form therewith a dielectric isolation region within said trench and to completely fill said coated trench with unoxidized polycrystalline semiconductor material so that air gaps are prevented from being formed in said isolation region; and

e. forming a plurality of pairs of transistors in said epitaxial layer, each pair of transistors having different transistors formed in the two epitaxial regions separated by said trench so that said pair of transistors are electrically isolated from each other by said isolation region.

4,486,267

CHEMITHERMOMECHANICAL PULPING PROCESS EMPLOYING SEPARATE ALKALI AND SULFITE TREATMENTS

Zenon C. Prusas, Chillicothe, Ohio, assignor to Mead Corporation, Dayton, Ohio

Filed Nov. 14, 1983, Ser. No. 551,392
Int. Cl.³ D21B *1/02*
U.S. Cl. 162—25 16 Claims

1. A process for the production of hardwood chemithermomechanical pulp, said process being characterized by a pulp yield of at least 80% based on dry wood chips, said process comprising the steps of:

(a) impregnating hardwood chips with an alkaline liquor, said alkaline liquor being an aqueous solution containing about 3 to 10% sodium hydroxide based on bone dry chips;

(b) maintaining said impregnated chips of step (a) for a period of time sufficient to permit chemical softening of said chips;

(c) removing said alkaline liquor from said chips;

(d) impregnating said alkaline softened chips with a sulfite liquor, said sulfite liquor being an aqueous solution containing about 2 to 10% by weight sodium sulfite or sodium bisulfite based on dry wood chips;

(e) cooking the impregnated chips of step (d) in said sulfite liquor at a temperature of approximately 120° to 180° C. for a period of time sufficient to sulfonate the lignin in said chips and further soften said chips without removing substantial amounts of lignin; and

(f) defibrating the chips of step (e) by passing said chips through a refining apparatus.

4,486,268

AIR/WATER HYBRID FORMER

David A. Nuttall, and Sung Ho Hong, both of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 259,962, May 4, 1981, Pat. No. 4,344,818. This application Jul. 14, 1982, Ser. No. 398,026
The portion of the term of this patent subsequent to Aug. 12, 1999, has been disclaimed.
Int. Cl.³ D21F *11/00*
U.S. Cl. 162—123 2 Claims

1. A method of forming a multi-layer absorbent web from a single headbox comprising:

(a) forming a first outer layer of papermaking fibers, said fibers being provided from a first flow channel of said headbox and being entrained in an air stream and having reduced inter-fiber hydrogen bonding therebetween;

(b) forming an inner layer of fibers, said fibers in said inner layer being provided in an aqueous fiber stock slurry from a second flow channel of said headbox;

(c) forming a second outer layer of papermaking fibers entrained in an air stream and having reduced inter-fiber bonding therebetween provided from a third flow channel of said headbox; and

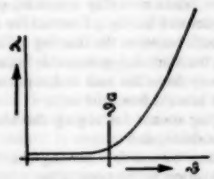
(d) dewatering said inner layer of fibers such that significant inter-fiber hydrogen bonds are formed between fibers within said layer.

4,486,269

METHOD OF DRY COOLING COKE

Friedrich Jokisch, Essen, Fed. Rep. of Germany, assignor to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 203,666, Nov. 3, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 424,965
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1980, 3002990
Int. Cl.³ C10B *39/02, 45/00*
U.S. Cl. 201—1 5 Claims



1. A method of dry cooling a gas-permeable loose coke with highly temperature dependent coefficient of thermal conductivity in a shaft-shaped chamber having an upper part and a lower part, comprising the steps of feeding a gas-permeable loose coke with highly temperature dependent coefficient of thermal conductivity in a shaft-shaped chamber from above downwardly; and supplying a gaseous cooling medium into said chamber so that the gaseous cooling medium flows from below in upward direction in counterstream to the coke to cool the latter, said gaseous cooling medium being subdivided into two separate streams which are introduced into said chamber simultaneously, one of said streams being introduced into the lower part of said chamber and the other of said streams being introduced into said chamber only in the region thereof in which the coke has at least a temperature (θ_G) above which the coefficient of thermal conductivity (λ) of the coke in dependence upon the temperature greatly increases, said supplying step including supplying the gaseous cooling medium in a predetermined quantity, said steps of subdividing the gaseous cooling medium and introducing said other stream including performing the same so that the other stream carries substantially between 20% and 50% in volume of the total quantity of the gaseous cooling medium supplied into said chamber, said

step of introducing the other stream including admitting the same into the region of the chamber, wherein the coke to be cooled has a temperature of approximately between 400° C. and 600° C.

4,486,270

APPARATUS FOR THE REMOVAL OF AMMONIUM CARBAMATE FROM A UREA-SYNTHESIS SOLUTION

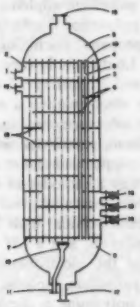
Petrus J. C. Kaasenbrood, Sittard, Netherlands, assignor to Unie Van Kunstmestfabrieken B.V., Utrecht, Netherlands

Division of Ser. No. 223,210, Jan. 7, 1981, abandoned. This application Oct. 19, 1981, Ser. No. 312,662

Claims priority, application Netherlands, Nov. 30, 1977, 7713190

Int. Cl.³ B01D *3/34*

U.S. Cl. 202—201 2 Claims



1. In an apparatus for the counter-current stripping of ammonium carbamate from an aqueous urea solution by means of a gaseous stripping agent, said apparatus comprising a tubular heat exchanger having a plurality of tubes with inner and outer wall surfaces vertically disposed within the interior of a jacket and extending between and through an upper and a lower tube sheet, a gas collecting chamber in fluid communication with the upper portion of said tubes, and a liquid collecting chamber in fluid communication with the lower portion of said tubes, said apparatus being further provided with:

means for introducing said aqueous urea solution into the upper portion of said tubes and causing it to flow down said inner wall surface as a film;

means for introducing said gaseous stripping agent into the lower portion of said tubes and causing it to flow upward through said tubes; and

means for heating said tubes comprising a jacket space defined by said upper and lower tube sheets, the outer wall surface of said tubes and said jacket, and inlet means for introducing a gaseous condensable heating agent into said jacket space, and outlet means for discharging of condensate from said jacket space;

the improvement comprising, elements designed, dimensioned and arranged for the counter-current stripping of ammonium carbamate from an aqueous urea solution by means of a gaseous stripping agent, including,

said jacket space outlet means is adapted to permit control of the condensate level within said jacket space at varying heights above said lower tube sheet;

said liquid collecting chamber is provided with means for maintaining a predetermined minimum liquid level therein; and

said liquid collecting chamber is further provided with at least one heat exchange member adapted to cool the liquid collected in said liquid collecting chamber.

4,486,271

COKE OVEN DOOR HAVING A LAMINATED SEALING STRIP

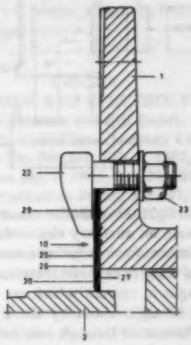
Kurt Lorenz, Hattingen, Fed. Rep. of Germany, assignor to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Jul. 22, 1983, Ser. No. 516,270

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1982, 3227733

Int. Cl.³ C10B *25/06, 25/16*

U.S. Cl. 202—248 15 Claims



1. A coke oven door construction for sealing an opening in a coke oven defined by a coke oven door frame, comprising:

a door body;

a sealing strip carried by said door body and extending around said door body, said sealing strip adapted for engagement to a coke oven door frame, said sealing strip formed of from two to ten juxtaposed metal layers each having a thickness of from 0.2 to 0.8 mm, each of said metal layers made of corrosion-resistant material which is resistant to stress cracking, each layer having a first end and a second end respectively adjacent a first end and a second end of said sealing strip, each of said first ends of said layers being welded together and each of said second ends of said layers being welded together, said sealing strip having a knife edge end portion at said second end of said sealing strip mounted for movement with respect to said door body and adapted for engagement with the coke oven door frame; and

a clamping mechanism connected to said door body and engaged with said first end of said sealing strip and each of said first ends of said layers, for clamping said first end of said sealing strip and said layers to said door body.

4,486,272

METHOD OF ELECTROCHEMICAL MEASUREMENT UTILIZING PHOTOCHEMICAL REACTION AND APPARATUS THEREFOR

Masamichi Fujihira, Sendai, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1982, Ser. No. 447,799

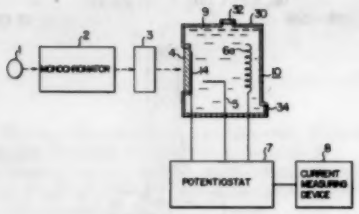
Claims priority, application Japan, Apr. 14, 1982, 57/62320

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—1 T 13 Claims

1. A method of electrochemical measurement utilizing photochemical reaction which includes using an electrolytic cell having a light transmissible wall, a light transmissible working electrode being provided on inner surface of said light transmissible wall; irradiating a monochromatic light to a sample solution in said electrolytic cell through said working electrode by directing the monochromatic light to the electrolytic cell; and measuring changes in current which are caused by photochemical reaction in said electrolytic cell brought about by said irradiation of light.

7. An apparatus for electrochemical measurement utilizing photochemical reaction which comprises an electrolytic cell, at least a part of a wall of which is of a light transmissible material and into which cell a sample containing substances capable of bringing about photochemical reaction is introduced; a light transmissible working electrode provided on



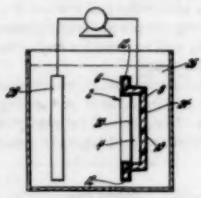
inner surface of said light transmissible material forming said at least a part of a wall; an auxiliary electrode provided in said electrolytic cell; a means for irradiating a monochromatic light in a step-functional state to said electrolytic cell; and a means for detecting changes in current which are caused by photochemical reaction brought about by the irradiation of light which has been transmitted through said working electrode.

4,486,273

SELECTIVE PLATING OF DIELECTRIC SUBSTRATES

Joseph P. Lutfy, Highland; Thaddeus J. Grabowski, Taylor, and Robert G. Arnold, Rochester, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 4, 1983, Ser. No. 520,478
Int. Cl.³ C25D 5/02, 5/54, 5/34
U.S. Cl. 204—15 2 Claims



1. In a process for metalizing a surface of a substantially dielectric substrate including the principal steps of electrolessly depositing a substantially continuous film of copper on said surface, immersing said substrate in a metal electroplating bath having an electroplating anode therein and cathodizing said film with respect to said anode to electrolytically deposite said metal on said film, the improvement comprising depositing said metal on only a selective region of said film by:

directing a narrow laser beam onto said film along a predetermined path to evaporate said copper off of said surface and expose a narrow strip of said substrate, said strip defining a zone of said film which is electrically isolated from said selective region;

positioning said selective region and said zone in close electrolytic proximity to said anode in said electroplating bath; and

cathodizing only said selective region to coat said region with said metal without substantially coating said zone.

4,486,274

PALLADIUM PLATING PRODEDURE

Joseph A. Abys, Bridgewater, and Harvey S. Trop, Morris Plains, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 239,151, Feb. 27, 1981, abandoned. This application Mar. 21, 1983, Ser. No. 477,588
Int. Cl.³ C25D 3/52, 3/56, 3/58, 3/64
U.S. Cl. 204—44 24 Claims

1. A process for electroplating a metallic substance on a surface, said metallic substance consists essentially of at least 10 mole percent palladium, remainder selected from the group consisting of silver, copper and nickel, comprising the step of passing current through a cathode, an electroplating bath and an anode with a cathode potential great enough to electroplate palladium, said electrochemical bath having a conductivity greater than a 10^{-3} mho-cm and a pH between 7.5 and 13.5, characterized in that the electroplating bath comprises an aqueous solution of palladium-aliphatic polyamine complex in which the aliphatic polyamine is selected from the group consisting of diaminopropane (including 1,3-diaminopropane), 1,4-diaminobutane, 1,6-diaminohexane, N,N,N',N'-tetramethyl-ethylenediamine and 2-hydroxy-1,3-diaminopropane.

23. A process for electroplating a metallic substance on a surface, said metallic substance consists essentially of at least 10 mole percent palladium, remainder selected from the group consisting of silver, copper and nickel, comprising the step of passing current through a cathode, an electroplating bath and an anode with a cathode potential great enough to electroplate palladium, said electrochemical bath having a conductivity greater than 10^{-3} mho-cm and a pH between 7.5 and 13.5, characterized in that the electroplating bath comprises an aqueous solution of palladium-aliphatic polyamine complex in which the aliphatic polyamine is diethylenetriamine and the molar concentration of diethylenetriamine is from 0.5 times the molar concentration of palladium to saturation of the diethylenetriamine.

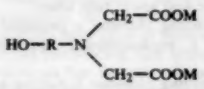
4,486,275

SOLUTION FOR ELECTROPLATING A GOLD-COPPER-CADMIUM ALLOY

Heinz Emmenegger, Rue du Locle 3a, La-Chaux-de-Fonds, Switzerland

Filed Feb. 6, 1984, Ser. No. 577,529
Claims priority, application Switzerland, Feb. 7, 1983, 682/83; Jun. 10, 1983, 3180/83
Int. Cl.³ C25D 3/62
U.S. Cl. 204—44 12 Claims

1. An electroplating solution for the electrolytic deposition of a gold-copper-cadmium alloy, comprising a complex gold cyanide, a complex copper cyanide, cadmium ions, free potassium cyanide, a wetting agent as a brightener, and a complexing agent of the general formula



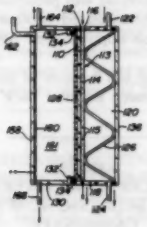
wherein R signifies an alkylene group having 1 to 4 carbon atoms, and M signifies sodium, potassium, or ammonium ions.

4,486,276

METHOD FOR SUPPRESSING HYDROGEN FORMATION IN AN ELECTROLYTIC CELL

Johann Gunther E. Cohn, West Orange, and Otto J. Adlhart, Newark, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Division of Ser. No. 232,348, Feb. 6, 1981, abandoned. This application Sep. 24, 1981, Ser. No. 305,059
Int. Cl.[3] C25B *1/34*
U.S. Cl. 204—98 4 Claims



1. A method for operating a cell for electrolysis of aqueous alkali metal chloride solutions, said cell comprising: an anode; a barrier membrane which is permeable to oxygen but impermeable to water, spaced from but substantially parallel to said anode; a catalytic cathode located between said anode and said barrier membrane; an ion-permeable membrane between said anode and said catalytic cathode closely adjacent to said cathode; means for removing caustic from the cathode by passing an aqueous liquid between said ion-permeable membrane and said barrier membrane and contacting said aqueous liquid with said catalytic cathode; and means for passing an oxygen-containing gas through said barrier membrane and into contact with said catalytic cathode;

said method comprising the steps of:

supplying an aqueous alkali metal chloride to said anode;

flushing said catalytic cathode with an aqueous liquid by passing said aqueous liquid between said ion-permeable membrane and said barrier membrane, and passing oxygen containing gas through said barrier layer and into contact with said catalytic cathode.

4,486,277

ELECTROLYTIC CATION EXCHANGE MEMBRANE

Haruhisa Miyake; Manabu Suhara; Hiroshi Mori, and Yoshihiko Saito, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed May 11, 1983, Ser. No. 493,574
Claims priority, application Japan, May 18, 1982, 57-82386
Int. Cl.[3] C25B *1/14, 13/00*
U.S. Cl. 204—98 12 Claims

1. An electrolytic cation exchange membrane which comprises a first film made of a fluorinated polymer having cation exchange groups and a second film laminated thereon, made of a fluorinated polymer having carboxylic acid groups as its ion exchange groups and containing the following repeating units (A), (B) and (C) and having a smaller thickness and greater specific electric resistance than the first film;

$$+CF_2-CXX'+ \quad (A)$$

$$+CF_2-\underset{\underset{O-R_f}{|}}{CX}+ \quad (B)$$

$$+CF_2-\underset{\underset{Y-COOM}{|}}{CX}+ \quad (C)$$

where each of X and X' is —F, —Cl or $-CF_3$, R_f is a perfluoroalkyl group having from 1 to 10 carbon atoms, M is hydrogen or an alkali metal and Y is selected from the group consisting of $-(CF_2)_x-$, $-O-(CF_2)_x-$,

$$+O-CF_2-\underset{\underset{Z}{|}}{CF}\overset{}{\rightarrow}_x \text{ and } +O-\underset{\underset{Z}{|}}{CF}-CF_2\overset{}{\rightarrow}_xO+\underset{\underset{Z}{|}}{CF}\overset{}{\rightarrow}_y$$

where each of x and y is an integer of from 0 to 10 and Z is —F or R_f as defined above, provided that B/A+B+C (molar ratio) and C/A+B+C (molar ratio) are from 0.01 to 0.3 and from 0.05 to 0.5, respectively.

4,486,278

CATHODE AND ELECTROLYSIS

Yoshio Oda; Hiroshi Otouma, and Eiji Endoh, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 346,245, Feb. 5, 1982, abandoned. This application Jul. 8, 1983, Ser. No. 511,725
Claims priority, application Japan, Feb. 27, 1981, 56-26921
Int. Cl.[3] C25B *1/14, 11/00*
U.S. Cl. 204—98 6 Claims

1. A method of electrolyzing an aqueous solution of an alkali metal halide, sea see water, water or a hydrogen halide, which comprises:

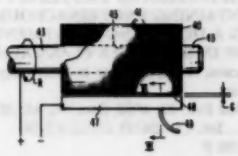
conducting said electrolysis an an electrolysis device, the cathode of which is a gas evolution cathode constructed of a liquid non-permeable substrate having a rough surface layer which is formed by the deposition of electrochemically active particles on said liquid non-permeable substrate, said rough surface layer having a fine electron non-conductive material discontinuously, but uniformly dispersed thereon.

4,486,279

APPARATUS AND METHOD FOR MAKING A LAMINATED CORE

Robert E. Fromson, Wilkins Township, Allegheny County; Maria E. Skutch, Trafford, both of Pa.; Charles S. Nunamaker, and Francis A. Scheda, both of Amherst, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 12, 1983, Ser. No. 493,843
Int. Cl.[3] C25F *3/14, 7/00*; B23P *1/12, 1/14*
U.S. Cl. 204—129.5 10 Claims



1. A method of improving the electrical characteristics of a generally laminated core of an electrical machine that includes a stack of laminations, comprising:

electrically connecting said laminated core in direct electrical communication with a positive terminal of a direct current source;

disposing a cathode that is in direct electrical communication with a negative terminal of said direct current source proximate a surface of said laminated core with a gap therebetween, said surface having a plurality of exposed edges of the laminations of said laminated core;

causing relative movement of said cathode and said surface by rotating said core about its central axis while said gap is maintained at a preselected distance; and

causing a liquid to flow in a continuous stream filling said

gap between said cathode and said surface, said liquid being a solution of a salt and water.

4,486,280

SELF-CURING MODIFIED EPOXY RESIN COMPOSITION AND AQUEOUS DISPERSION THEREOF

Fumio Hosoi; Takashi Sasaki; Miyuki Hagiwara; Shigenori Egusa, and Kiyoshi Nanishi, all of Gunma, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Jun. 28, 1983, Ser. No. 508,564

Claims priority, application Japan, Aug. 30, 1982, 57-150271

Int. Cl.³ C08F *283/10, 2/52;* **C08L** *62/10*

U.S. Cl. 204—159.11 **16 Claims**

1. A self-curing resin composition produced by irradiating with an electron beam a mixture of 85 to 97 wt% of an epoxy resin and 3 to 15 wt% of a quaternary alkyl ammonium salt of an α,β-unsaturated carboxylic acid.

5. An aqueous dispersion produced by first dissolving 100 parts by weight of a resin composition according to claim 1 in 30 to 200 parts by weight of an organic solvent, adding to the resulting solution 100 to 700 parts by weight of water per 100 parts by weight of the resin composition, and stirring the mixture until it becomes homogeneous.

4,486,281

PHOTOCURING OF ORGANOPOLYSILOXANES DEVOID OF SI-H BONDS AND CONTAINING NO SITES OF ACTIVATED ETHYLENIC UNSATURATION

Raymond Pigeon, Francheville, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Continuation-in-part of Ser. No. 447,482, Dec. 7, 1982, abandoned. This application Jun. 7, 1983, Ser. No. 501,912

Claims priority, application France, Dec. 9, 1981, 81 23134

Int. Cl.³ C08F *2/46, 30/08*

U.S. Cl. 204—159.13 **18 Claims**

1. A process for the photocuring of an organopolysiloxane composition, comprising subjecting to a photocross-linking amount of ultravoilet radiation, admixture of (i) a polysiloxane comprised of hydroxysilyl groups devoid of Si-H bonds and containing no organic radicals which include sites of activated ethylenic unsaturation, and (ii) an aminopolyalkoxysilane, with said admixture being in the form of a thin layer thereof, in a gaseous atmosphere comprised of at least traces of oxygen.

4,486,282

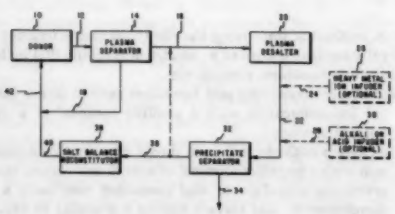
PRECIPITATION OF PROTEINS FROM SALT-CONTAINING PROTEINACEOUS FLUIDS EMPLOYING A DESALTING TREATMENT, AND USE THEREOF IN SELECTIVE PLASMAPHERESIS

Milan Bier, Tucson, Ariz., assignor to University Patents, Inc., Norwalk, Conn.

Filed Feb. 22, 1983, Ser. No. 468,251

Int. Cl.³ B01D *13/02, 13/00*

U.S. Cl. 204—180 P **28 Claims**



14. In a selective plasmapheresis method for the removal or recovery of one or more selected plasma proteins from whole blood, comprising the steps of withdrawing whole blood from a living donor, separating said whole blood into a plasma fraction and a corpuscular element fraction, treating said plasma fraction so as to remove said selected plasma proteins therefrom, recombining the resulting protein-impoverished plasma fraction with said corpuscular element fraction, and returning said recombined fractions back into the blood stream of said donor, the improvement wherein said protein-impoverished plasma fraction is obtained by the steps comprising:

(a) subjecting said separated plasma fraction to a desalting treatment controlled so as to reduce the physiological salt content thereof to a predetermined level at which said selected plasma proteins will preferentially precipitate;

(b) separating the precipitated protein fraction from the supernatant protein-impoverished desalted plasma fraction; and

(c) reconstituting the salt balance of said protein-impoverished desalted plasma fraction back to a physiological level.

4,486,283

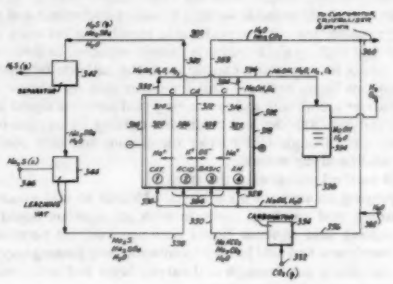
MEMBRANE PROCESS FOR CONVERTING SODIUM SULFATE INTO SULFURIC ACID AND SODIUM CARBONATE

Alvaro R. Tejeda, 22 E. 29th St., New York, N.Y. 10016

Filed Aug. 1, 1983, Ser. No. 518,056

Int. Cl.³ B01D *13/02*

U.S. Cl. 204—180 P **14 Claims**



1. A process for the electrodialysis of aqueous solutions of Na_2S and Na_2SO_4 with impurities in an electrodialysis apparatus having

I. a cathode electrode in a cathode compartment,

II. an anode electrode in an anode compartment

III. between which is located an electrodialysis cell,

IV. constituting acid and base zones, said electrodialysis cell being composed of

V. alternating cation permselective membranes and bi-polar membranes, each bi-polar membrane having a cation permselective face and an anion permselective face,

VI. each acid zone being defined by a cation permselective membrane spaced from and confronting a cation permselective face of a bi-polar membrane and

VII. each base zone being defined by a cation permselective membrane spaced from and confronting an anion permselective face of a bi-polar membrane,

VIII. all of the bi-polar membranes being so arranged that their anion permselective faces face the anode electrode and their cation permselective faces face the cathode electrode,

said process comprising the steps of:

(a) introducing an aqueous solution of Na_2S and Na_2SO_4 with impurities into acid zones of the electrodialysis cell;

(b) introducing an aqueous solution of a sodium salt selected from the group consisting of

(i) $NaHCO_3$ and

(ii) a mixture of $NaHCO_3$ and Na_2CO_3

(c) passing direct current through the electrodialysis cell between the cathode electrode and the anode electrode to traverse the acid zones and the base zones thereby to produce an aqueous solution of Na_2SO_4, H_2S gas and free H^+ions in the acid zones and converting $NaHCO_3$ to Na_2CO_3 and produce free OH^-ions in the base zones;

(d) the Na_2S in the acid zones reducing the free H^+ion concentration in the acid zones and the $NaHCO_3$ in the base zones reducing the free OH^-ion concentration in the base zones to raise the current efficiencies of said zones;

(e) withdrawing from the acid zones sodium sulfate in water solution and H_2S gas; and

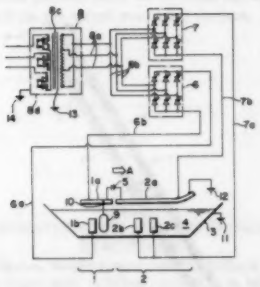
(f) withdrawing from the base zones water solutions from the groups consisting of a water solution of Na_2CO_3 and a mixture of a water solution of Na_2CO_3 and $NaHCO_3$.

4,486,284

METHOD OF ELECTRODEPOSITION COATING AND APPARATUS THEREFOR

Takanobu Mori; Yoshinobu Takahashi, and Haruo Murase, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Nov. 30, 1982, Ser. No. 445,712
Claims priority, application Japan, Nov. 30, 1981, 56-192658
Int. Cl.³ C25D *13/00, 13/18, 13/22*
U.S. Cl. 204—181 R **4 Claims**



1. A method of electrodeposition coating wherein a work is transferred from a conduction stage of low voltage to a conduction stage of higher voltage among a plurality of conduction stages provided along a path of transfer of a work in an electrodeposition bath, and wherein a plurality of rectifiers are each connected to a bus bar and an anode plate of a respective conduction stage and all of said rectifiers are connected in common to a single power transformer, wherein both the bus bar of the conduction stage of the highest voltage and the electrodeposition bath are grounded, and wherein said bus bars of said conduction stages are disconnectively connected through conductors, said method comprising the steps of:

conducting current, while a work is at a conduction stage of low voltage, to said work from the anode plate of a conduction stage of higher voltage by means of a closed electric circuit formed by the rectifier provided for said conduction stage of higher voltage, the anode plate of the conduction stage of higher voltage, a paint in said electrodeposition bath, said work at said conduction stage of low voltage, the bus bar of said conduction stage of low voltage, the rectifier provided for said conduction stage of low voltage, and the rectifier provided for the conduction stage of higher voltage, as well as conducting current to said work from the anode plate of said conduction stage of low voltage;

connecting the bus bar of the low voltage conduction stage and the bus bar of the next higher voltage conduction stage through the conductor between said low voltage stage bus bar and said next higher voltage stage bus bar to thereby adjust the electric potential of the bus bar of the low voltage conduction stage to be substantially equal to the electric potentential of the next higher voltage conduction stage while maintaining the output voltage of the low voltage conduction stage constant;

transferring said work from said conductions stage of low voltage to said next conduction stage of higher voltage while conducting said current continuously while said work is being transferred;

disconnecting the bus bar of said low voltage conduction stage from the bus bar of said next higher voltage conduction stage by opening said conductor between said bus bar of low voltage and said bus bar of said next higher voltage when said work is completely transferred to said next conduction stage of higher voltage;

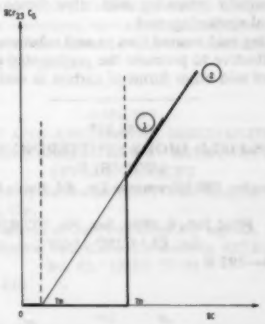
conducting a current to said work, while said work is at a conduction stage of the highest voltage, wherein said current which is conducted to said work while said work is at said conduction stage of highest voltage is supplied only from the anode plate of said conduction stage of the highest voltage.

4,486,285

CHROMIUM COATING WITH HIGH HARDNESS CAPABLE OF RESISTING WEAR, STRAIN SURFACE FATIGUE AND CORROSION ALL AT THE SAME TIME

André Aubert, Grenoble; Jacques Chevallier, Meylan; Antoine Gaucher, Andrezieux-Boutheon, and Jean-Paul Terrat, Saint Etienne, all of France, assignors to Centre Stephanois De Recherches Mecanmiques Hydromecanique et Frottement, France

Filed Sep. 2, 1982, Ser. No. 414,100
Claims priority, application France, Sep. 3, 1981, 81 17040
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 C **12 Claims**



1. A method of chromium plating a workpiece in the presence of a preselected element capable of forming a solid solution with chromium, said preselected element being selected from a group consisting of carbon and nitrogen, said method comprising the steps of:

placing said workpiece in a vacuum;

cathode sputtering said chromium onto a surface of said workpiece; and

introducing said preselected element during said cathode sputtering in a predetermined proportion to said chromium, said predetermined proportion being between a lower limit T_m and a higher limit T_M such that between these two limits none of the compounds and phases thermodynamically predictable from the equilibrium diagram of chromium with said preselected element are found in the coating, the lower limit T_m being the saturation limit

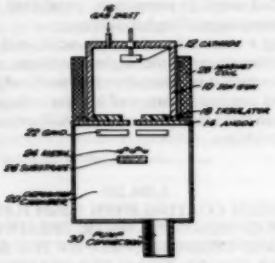
of the equilibrium diagram of said preselected element in chromium, said predetermined proportion thereby being outside of the thermodynamic equilibrium range of solution of said preselected element in chromium.

4,486,286

METHOD OF DEPOSITING A CARBON FILM ON A SUBSTRATE AND PRODUCTS OBTAINED THEREBY

Gerhard Lewin, West Orange, N.J., and Dan Nir, Haifa, Israel, assignors to Nerken Research Corp., Brookville, N.Y. and Technion Research & Development Foundation, Ltd., Haifa, Israel

Filed Sep. 28, 1982, Ser. No. 425,704
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 C **23 Claims**



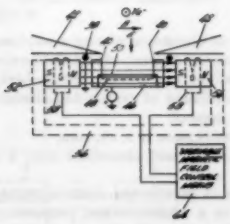
1. A method of forming a diamond-like carbon film on a substrate comprising:
(a) providing a source of carbon ions;
(b) directing carbon ions to a substrate under conditions producing a diamond-like carbon film which may contain other forms of carbon;
(c) providing a source of second ions from a non-hydrocarbon gas in greater than an impurity amount capable of preferentially removing said other forms of carbon by chemical sputtering; and
(d) directing said second ions to said substrate under conditions effective to promote the preferential chemical sputtering of said other forms of carbon in said film.

4,486,287

CROSS-FIELD DIODE SPUTTERING TARGET ASSEMBLY

Paul R. Fournier, 980 Miramonte Dr., #4, Santa Barbara, Calif. 93109

Filed Feb. 6, 1984, Ser. No. 577,016
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 R **17 Claims**



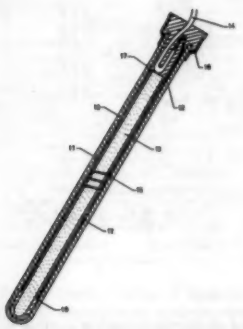
1. An improved cross-field diode sputtering target assembly comprising
an ion target having a selected surface formed of a selected material, said ion target being formed into a predetermined closed loop pattern having a central opening therein, said selected surface having spaced edges and wherein the selected surface is adapted to be controllably eroded in a sputtering process;
means positioned in operative relationship to each of the spaced edges of said selected surface for forming walls which extend substantially normal from and beyond each spaced edge of said selected surface of the ion target; and
magnetic means having poles positioned in an opposed spaced relationship to each other and enclosing said means for defining said walls and said ion target for producing a linear magnetic field (B) through the walls, over the selected surface and through the ion target, said magnetic means having a linear magnetic field of sufficient strength for plasma entrapment between said walls and over said selected surface wherein said selected surface is adapted to have an electric field (E) applied thereacross at a direction substantially normal to the magnetic field (B) to develop a $B \times E$ field and to entrap secondary electrons at said selected surface to control the erosion pattern thereof.

4,486,288

OXIDE ANODE FOR USE IN IMPRESSED CURRENT CATHODIC CORROSION PROTECTION

Björn H. Linder, 225 Strandvägen, S-26161 Landskrona, Sweden

Filed Mar. 11, 1982, Ser. No. 357,289
Int. Cl.³ C23F *13/00*
U.S. Cl. 204—196 **9 Claims**



2. A metal oxide anode for use in impressed current cathodic protection against corrosion, comprising a metal oxide anode member having a cavity therein, an electrically conductive coating covering the central portion of the sidewalls of said cavity but not the portions of said sidewalls adjacent the edges thereof, and a cable termination member in contact with only the central area of said coating.

4,486,289

PLANAR MAGNETRON SPUTTERING DEVICE

Robert R. Parsons; Richard McMahon, and Michael L. Thewalt, all of Vancouver, Canada, assignors to University of British Columbia, Canada, Vancouver, Canada

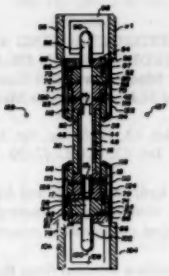
Continuation-in-part of Ser. No. 345,958, Feb. 5, 1982, abandoned. This application Jan. 19, 1984, Ser. No. 572,037
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **22 Claims**

1. A planar magnetron sputtering cathode comprising:
(a) a magnetically permeable housing having:
(i) a side with adjacent inner and outer surfaces, the outer surface having a target mounting surface partially defined by opposite side edges extending therealong; and

(ii) an elongated cavity therein partially defined by the side;

(b) clamp means for removably retaining a target on the target mounting surface is close thermal and electrical contact therewith;

(c) a row of parallel, spaced apart, elongated magnet wafers



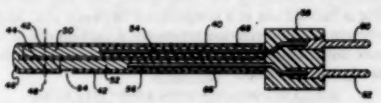
disposed in the cavity, the row being substantially equal in length to the length of the target mounting surface, each pole of each of the magnets being immediately adjacent the inner surface of the side, so that a substantially uniform magnetic field can extend directly from the row to adjacent to, and parallel with, an exposed surface of a target positioned on the target mounting surface.

4,486,290

COMBINATION ION SELECTIVE SENSING ELECTRODE

Patrick T. Cahalan, Maple Grove, and Michelle A. Schwinghammer, Forest Lake, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 3, 1983, Ser. No. 519,938
Int. Cl.³ G01N 27/46
U.S. Cl. 204—414 **2 Claims**



1. An ion sensing electrode, comprising:

a plastic tube having a proximal end, a distal end, a first lumen, a second lumen, an outer wall surrounding said first and second lumens and an inner wall separating said first and second lumens, said first lumen extending to the distal end of said tube, said second lumen extending only to a first point proximal to the distal end of said tube, a portion of said tube extending from the distal end of said tube only to a second point distal to said first point impregnated with an ion selective material;

electrode gel filling said first and second lumens;

sealing means for sealing the distal end of said first lumen, the distal end of said second lumen open to the exterior of said tube; and

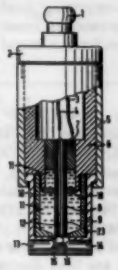
first and second electrodes inserted in the first and second lumens of said tube.

4,486,291

MEASURING APPARATUS FOR THE DETERMINATION OF OXYGEN PARTIAL PRESSURE IN FLUIDS AND GASES

Johannes G. Schindler, and Maria Schindler nee Kardosova, both of Marburg an der Lahn, Fed. Rep. of Germany, assignors to Fresenius AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 170,556, Jul. 21, 1980, abandoned. This application Sep. 7, 1982, Ser. No. 415,277
Int. Cl.³ G01N 27/30, 27/54
U.S. Cl. 204—415 **6 Claims**



1. Measuring apparatus or probe for the determination of oxygen partial pressure in liquids and gases comprising:

(a) a metallic cathode substantially sheathed by an insulating material having a small unsheathed metallic surface,

(b) an anode,

(c) a barrier layer impermeable to cations of the material forming the anode comprising at least one member selected from the group consisting of organic or inorganic anion exchangers and interposed between said anode and said unsheathed metallic surface of said cathode, and

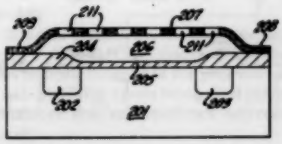
(d) a liquid impermeable, ion impermeable but gas permeable membrane interposed between the material whose oxygen content is to be measured and the unsheathed metallic surface of the cathode.

4,486,292

SUPPORT AND ANCHORING MECHANISM FOR MEMBRANES IN SELECTIVELY RESPONSIVE FIELD EFFECT DEVICES

Gary F. Blackburn, North Salt Lake, Utah, assignor to Critikon, Inc., Tampa, Fla.

Continuation-in-part of Ser. No. 304,722, Sep. 23, 1981,. This application Jan. 13, 1983, Ser. No. 457,818
Int. Cl.³ G01N 27/46
U.S. Cl. 204—416 **2 Claims**



1. In a system employing a selectively reactive membrane overlying a specified gate region of a field effect device, the improvement comprising: a substantially nonreactive mesh structure spaced away from but overlying said specified region, wherein said mesh spans and encloses said gate region, is affixed to said device about the periphery of said region, and forms a void, open through said mesh, for location of a mem-

brane; and a membrane integrally located within said void and through openings in said mesh on the outside of said mesh.

4,486,293

CATALYTIC COAL HYDROLIQUEFACTION PROCESS

Diwakar Garg, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 25, 1983, Ser. No. 488,553
Int. Cl.[3] C10G 1/08
U.S. Cl. 208—10 13 Claims

1. A process for the liquefaction of coal in an essentially hydrocarbon hydrogen donor solvent at a temperature above 750° F. using a feed comprising: coal, solvent and a freshly added unsupported co-catalyst combination of iron and a Group VI or VIII non-ferrous metal or compounds of the catalyst.

4,486,294

PROCESS FOR SEPARATING HIGH VISCOSITY BITUMEN FROM TAR SANDS

Jan D. Miller, and Manoranjan Misra, both of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Continuation-in-part of Ser. No. 194,515, Oct. 6, 1980, Pat. No. 4,410,417. This application Oct. 17, 1983, Ser. No. 543,193
The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.
Int. Cl.[3] C10G 1/00, 1/04
U.S. Cl. 208—11 LE 13 Claims

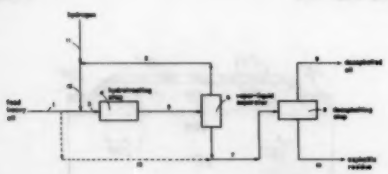
1. A process for recovering bitumen for tar sand comprising:
obtaining a tar sand;
grinding the tar sand so as to mechanically fracture the bitumen and thereby disengage bitumen particles from sand particles;
mixing a wetting agent with the tar sand during ,he grinding step, the wetting agent further assisting in disengaging the bitumen particles from the sand particles;
conditioning the bitumen particles with an oil to enhance the hydrophobicity of the bitumen particles; and
separating the bitumen particles from the sand particles by flotation.

4,486,295

PROCESSING HEAVY HYDROCARBON OILS

Masayoshi Inooka, Kanagawa, Japan, assignor to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 82,037, Oct. 5, 1979, abandoned. This application Sep. 14, 1981, Ser. No. 301,581
Claims priority, application United Kingdom, Oct. 5, 1978, 39443/78
Int. Cl.[3] C10G 67/04
U.S. Cl. 208—96 8 Claims



1. A method of processing a heavy hydrocarbon oil which consists essentially of the steps of (a) hydrotreating the heavy hydrocarbon oil with a hydrogen rich gas at a hydrogen pressure of from 30 to 350 Kg/cm^2 and a reaction temperature of from 350° to 450° C. in the presence of a catalyst containing a catalytic metal component comprising one or more metals of Groups Ib, IIb, IIIa, Va, VIa and VIII in the periodic table according to Mendeleev supported on, as a carrier, porous magnesium silicate selected from the group consisting of sepiolite, attapulgite and palygoskite to obtain a hydrotreated oil, (b) separating the hydrotreated oil from the hydrogen rich gas, and (c) contacting the hydrotreated oil at a temperature of from 10° to 267° C. and a pressure of from 1 to 50 Kg/cm^2 with a paraffinic hydrocarbon having from 3 to 7 carbon atoms as a solvent to divide it into an asphaltic residue and a deasphalted oil containing substantially no asphaltene.

4,486,296

PROCESS FOR HYDROCRACKING AND DEWAXING HYDROCARBON OILS

Stephen M. Oleck, Moorestown, and Robert C. Wilson, Jr., Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 13, 1983, Ser. No. 541,763
Int. Cl.[3] C10G 47/20
U.S. Cl. 208—111 21 Claims

1. A process for hydrodewaxing and hydrocracking a hydrocarbon fraction, comprising contacting said hydrocarbon fraction with a catalyst composition comprising a three-component mixture of:
(a) one or more zeolites selected from the groups consisting of zeolite X and Y, the acid form of zeolite Y and other natural or synthetic faujasites,
(b) a hydrogenation metal, and
(c) zeolite beta.

4,486,297

PROCESS FOR DESULFURIZING AND REFINING HYDROCARBON FRACTION CONTAINING LARGE QUANTITIES OF AROMATIC COMPONENTS

Hideyuki Matsumoto, Yokohama, and Shiyouichi Bando, Handa, both of Japan, assignors to JGC Corporation, Tokyo, Japan

Filed Jan. 9, 1981, Ser. No. 223,783
Claims priority, application Japan, Jan. 12, 1980, 55-2246; Oct. 7, 1980, 55-140026
Int. Cl.[3] C10G 65/06, 45/08
U.S. Cl. 208—211 18 Claims

1. A process for desulfurizing hydrocarbon fractions containing organic sulfur compounds as impurities and aromatic components by hydrotreating the hydrocarbon fraction so as to convert the organic sulfur compounds to hydrogen sulfide with a catalyst selected from Co—Mo system, Ni—Mo system and Ni—Co—Mo system catalysts, and by removing thus formed hydrogen sulfide, which process is characterized in that the catalyst is subjected to preliminary sulfurization treatment with thiophenes by being contacted with hydrogen and a hydrocarbon containing the thiophenes, and that the hydrotreating is carried out at a temperature between 200° and 400° C.; wherein the sulfurization treatment is carried out at a temperature sufficiently higher than the hydrotreating, whereby the catalyst is sulfurized.

4,486,298

ADSORPTIVE DEMETALATION OF HEAVY PETROLEUM RESIDUA

Emmerson Bowes, Woodstown; Susan D. Brandes, Trenton; Malvina Farcasiu, and Eric J. Y. Scott, both of Princeton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 28, 1981, Ser. No. 267,307
Int. Cl.[3] C10B 29/04
U.S. Cl. 208—253 15 Claims

1. A method for effecting removal of heavy metal contaminants from petroleum residua consisting essentially of contacting said residua dispersed in a suitable solvent with a solid large pore sorbent wherein said sorbent is selected from the group consisting of alumina, silica, silica-alumina, manganese nodules, iron nodules, manganese/iron nodules and mixtures of any of the above having an effective pore size of about 50 to 1000 Angstroms at atmospheric pressure and a temperature of

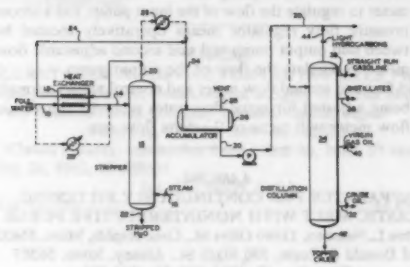
from about 25° to 400° C. for a time sufficient to remove the major portion of said contaminants therefrom.

4,486,299

REMOVING NH_3 AND H_2S FROM AQUEOUS STREAMS

James G. Kettinger, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 10, 1982, Ser. No. 416,775
Int. Cl.³ B01D *3/34*
U.S. Cl. 208—356 **10 Claims**



1. A method for removing NH_3 and H_2S from an aqueous stream containing significant amounts of nitrogen and sulfur contaminants and reducing corrosion and the deposition of solids from the vapor produced in the fractionation of crude oil comprising:

(a) steam stripping said aqueous stream in a stripping zone under conditions of temperature and pressure sufficient to produce a first vapor stream, containing water and a major portion of said NH_3 and H_2S, and a first liquid stream, containing water and minimal amounts of said NH_3 and H_2S;

(b) reducing the temperature of said first vapor stream to a temperature at which a substantial portion of H_2S is insoluble in water, to produce a second vapor stream, containing a major portion of said H_2S and a second liquid stream, containing a major portion of said NH_3;

(c) separating said second vapor stream from said second liquid stream, in a separation zone;

(d) fractionally distilling a crude oil, in a fractionation zone, to produce a plurality of fractions therefrom, including a vapor phase fraction containing a major portion of the lowest boiling components of said crude oil and a liquid phase fraction containing a major portion of the highest boiling components of said crude oil; and

(e) adding at least a part of said second liquid stream to said vapor phase fraction thus produced by fractionally distilling said crude oil.

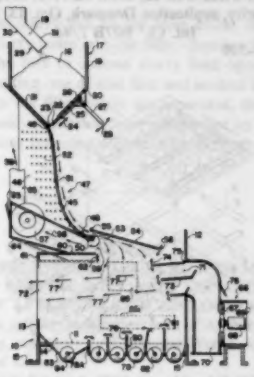
4,486,300

SPECIFIC GRAVITY GRAIN GRADER

William Prieb, Box 86, Lang, Saskatchewan, Canada S0G 2W0

Filed Aug. 25, 1982, Ser. No. 411,434
Claims priority, application Canada, Sep. 1, 1981, 384950
Int. Cl.³ B07B *4/02*; B65G *65/32*
U.S. Cl. 209—135 **25 Claims**

1. A specific gravity grain grader comprising in combination an enclosure, a plurality of separate grain collector means situated transversely across the base thereof, a fan assembly positioned and arranged to generate an airstream which passes longitudinally through said enclosure, an air inlet through one wall of the enclose and an air exit through another wall of said enclosure opposite to said inlet, grain hopper means operatively connected with the enclosure adjacent an upper side thereof, a downwardly and horizontally inclining grain slide extending from and communicating with said grain hopper means for depositing grain into the airstream in a direction generally opposite thereto whereby the grain is separated by said airstream into respective ones of said grain collector means, wherein said grain slide comprises a flexible resilient sheet which is inclined and contoured so as to span said enclosure and secured by an upper end thereof adjacent a discharge of said grain hopper means, means for anchoring a lower end of said sheet to said enclosure and a plurality of spaced and



parallel transversely extending rods spanning said enclosure under said sheet and being individually adjustably positionable within said sides of said enclosure, the resiliency of said sheet maintaining same against said rods, whereby adjustment of the position of the rods acts to control the angle of inclination and contour of the sheet.

4,486,301

METHOD OF BENEFICIATING HIGH CARBONATE PHOSPHATE ORE

Shuang-shii Hsieh, and James R. Lehr, both of Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 525,073, Aug. 22, 1983, now Defensive Publication No. T104,304. This application Jan. 16, 1984, Ser. No. 571,320
Int. Cl.³ B03D *1/14*
U.S. Cl. 209—167 **5 Claims**

1. An ore flotation process which comprises the steps of

(1) subjecting a phosphate ore containing carbonate mineral impurities to froth flotation in the presence of modifying agents, said modifying agents being alkyl phosphonic acid and hydrofluoric acid, and a collector, said collector being a fatty acid;

(2) collecting the phosphate and carbonate minerals as rougher concentrate from the overflow;

(3) subjecting the phosphate and carbonate mineral concentrate to a differential desorption with an acid to remove fatty acid from the surface of phosphate mineral;

(4) removing the separated carbonate minerals from the overflow; and

(5) recovering the phosphate values in the underflow.

4,486,302

SCREEN

Aage B. Jorgensen, Hojbjerg, Denmark, assignor to Aktieselskabet Nordiske Kabel- og Traadfabriker, Copenhagen, Denmark

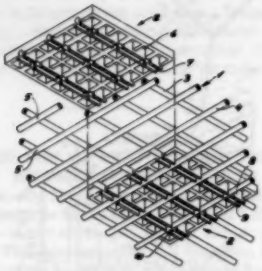
PCT No. PCT/DK81/00088, § 371 Date Jun. 4, 1982, § 102(e) Date Jun. 4, 1982, PCT Pub. No. WO82/01330, PCT Pub. Date Apr. 29, 1982

PCT Filed Oct. 12, 1981, Ser. No. 395,000

Claims priority, application Denmark, Oct. 13, 1980, 4329/80

Int. Cl.³ B07B *1/46*

U.S. Cl. 209—399 5 Claims



1. A screen which comprises a rigid supporting frame on whose upper side mutually adjoining apertured screen elements of resilient material with substantially rectangular borders are detachably supported, said supporting frame consisting essentially of an upper and a lower layer of substantially rectilinear, mutually parallel metal bars, the bars of the respective layers lying essentially in only their own layer, so that the bars of the upper layer lie only above the bars of the lower layer, the bars in the upper layer being disposed transversely to the bars in the lower layer and joined with the bars of said lower layer at intersections of said bars of said respective layers whereby to form a rigid grid, each screen element having at its underside at least two longitudinal guide grooves located at borders outside the areas of the apertures, said guide grooves being constructed and arranged to be snapped onto the upper layer of bars, said guide grooves having sufficient depth that the lower layer of the bars of the supporting frame can engage the underside of the screen elements when the screen elements are supported by the upper layer, opposing sides of the guide grooves being provided with recesses for accomodating the passage of the transversely extending bars of the lower layer.

4,486,303

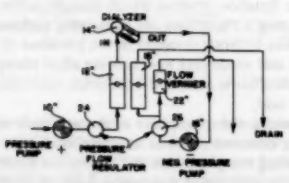
ULTRAFILTRATION IN HEMODIALYSIS

Donald W. Brous, 110 Hunt, Peterborough, N.H. 03458

Continuation-in-part of Ser. No. 308,985, Oct. 6, 1981, abandoned. This application Apr. 5, 1983, Ser. No. 482,141

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—87 2 Claims



2. Hemodialysis apparatus including a dialyzer and input and output pumps therefor,

a first flow meter and control means operatively located between the input pump and the dialyzer, and a second flow meter and control means operatively located after the output pump and dialyzer,

said first and second flow meter means each being adjustable for controlling the passage of fluid therethrough at a selected flow rate, and each having means for indicating the flow rate of fluid passing therethrough, a vernier flow meter of lesser capacity than said second flow meter located in parallel with the output flow meter and receiving effluent from said output pump,

a first pressure flow regulator means operatively located between said input pump and said first adjustable flow meter to regulate the flow of the input pump, and a second pressure flow regulator means operatively located between said output pump and said second adjustable flowmeter to regulate the flow of the output pump,

said first and second flow meter and control means normally being adjusted for equal flow rates whereby the vernier flow meter will measure the delta flow rate.

4,486,304

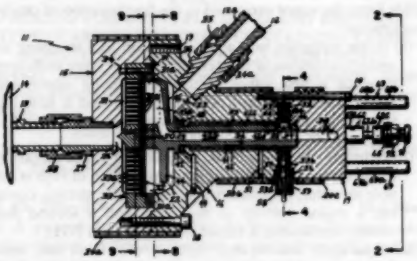
APPARATUS FOR CONTINUOUSLY FILTERING PLASTIC MELT WITH NONINTERRUPTIVE PURGE

Clayton L. Neuman, 11440 Olive St., Coon Rapids, Minn. 55433, and Donald J. Reum, 330 Sixth St., Albany, Minn. 56307

Filed Jun. 17, 1982, Ser. No. 389,378

Int. Cl.³ B01D *29/38, 35/12*

U.S. Cl. 210—107 19 Claims



1. Apparatus for continuously filtering a flow of material, comprising:

housing means defining an inlet for the unfiltered material and an outlet for filtered material;

filter means disposed in the housing between the inlet and outlet;

collector means disposed adjacent the filter means on its upstream side, the collector means having a plurality of separate passages defining collector pockets for contaiminants filtered by the filter means, the collector means being otherwise imperforate;

collector head means disposed in the housing means for movement relative to the collector means, the collector head means being configured for discrete communication with each of said collector pockets;

first drive means for moving the collector head means through a series of stationary positions in stepped sequence, each stationary position corresponding to a collector pocket with which the collector head means is in registration;

a contaminant dischage passage disposed in the housing means in communication with the collector head means, the discharge passage including a discharge outlet for contaminants;

valve means for blocking the discharge passage between the collector head means and discharge outlet in a first position, and for opening the discharge passage in a second position;

second drive means for moving the valve means between said first and second positions;

and actuator means commonly connected to the first and second drive means for simultaneous operation thereof in timed relation, the actuator means and first and second drive means being contructed and arranged to open the discharge passage when the collector head means is in stationary registration with a selected collector pocket, and to close the discharge passage when the collector head means is moved between collector pocket registration positions.

4,486,305

SLURRY FEEDING DEVICE FOR USE IN FILTER PRESS

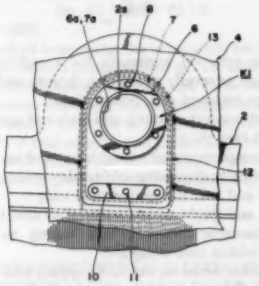
Masayuki Nakamura, Osaka, Japan, assignor to Kurita Machinery Manufacturing Company Limited, Osaka, Japan

Filed Sep. 2, 1983, Ser. No. 528,983

Claims priority, application Japan, Sep. 20, 1982, 57-164511; Oct. 26, 1982, 57-188635

Int. Cl.³ B01D *25/12*

U.S. Cl. 210—227 **15 Claims**



1. A slurry feeding device for use in a filter press having at least one pair of first and second filter plates with first and second slurry holes therein, respectively, and a pair of first and second filter cloths interposed between said first and second filter plates in only abutting relationship therewith, with said first and second slurry holes confronting each other, said first and second filter cloths having, respectively, first and second slurry feed openings and defining a filter chamber therebetween when said first and second filter plates are clamped to each other, said slurry feeding device being operable to feed slurry to be filtered from either one of said first and second slurry holes into said filter chamber, said slurry feeding device comprising:

a pair of first and second plate members which have, respectively, first and second through holes and for being positioned between the first and second filter cloths; and

a plurality of first and second fastening members for securing said first and second filter cloths to said first and second plate members with the first and second slurry feed openings respectively communicated with the first and second through holes, when the first and second filter cloths are respectively interposed between the first filter plate and said first plate member and between the second filter plate and said second plate member, said fastening members projecting from the faces of said plate members which face away from the filter cloths for, when the first and second filter plates are clamped to each other, only abutting the opposite plate member and fastening member assembly for defining a clearance between the first face of said first plate member facing away from the first filter cloth and a second face of said second plate member facing away from the second filter cloth;

said first and second through holes, when the first and second filter plates are clamped to each other, confronting each other so as to be, respectively, communicated with the first and second slurry holes through the first and second slurry feed openings, and with said first and second through holes being in communication with said clearance and said clearance being in communication with the filter chamber,

whereby the slurry can be fed from either the first or the second slurry holes into the filter chamber through either one of the first or second slurry feed openings and the corresponding one of said first and second through holes, and when the filter plates are separated, the filter cloths can be easily separated from each other by movement of the abutting fastening members away from each other.

4,486,306

FILTER PRESS WITH FILTER PLATES MUTUALLY LOCKED AND INDIVIDUALLY CONSECUTIVELY SLIDABLE AFTER RELEASE OF LOCKING MEANS

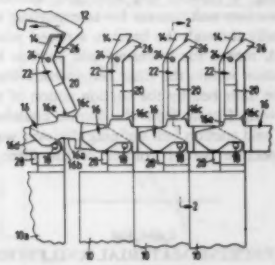
Oswald Busse, and Hugo Klesper, both of Aarbergen, Fed. Rep. of Germany, assignors to Passavant-Werke AG & Co. KG, Fed. Rep. of Germany

Filed Apr. 4, 1983, Ser. No. 465,421

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 3204608

Int. Cl.³ B01D *25/12*

U.S. Cl. 210—230 **8 Claims**



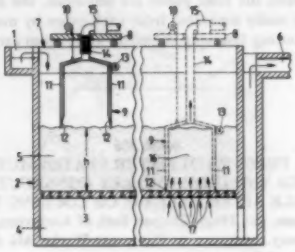
1. A filter press having filter plates mutually locked by locking means and individually and consecutively slidable after release of the locking means, wherein when the filter press is closed each filter plate is locked to the filter plate following it by a locking hook engaging a locking bolt and when the filter press is opened is separable from the following filter plate by means of a transport element moving along the filter plate, the improvement comprising:

(a) a blocking element mounted on each filter plate for pivotal movement to a blocking position positively blocking unlocking movement of the locking hook locking its filter plate to said following filter plate and to a release position to release its filter plate for separation from said following filter plate only after said locking hook is released by said blocking element,

(b) an actuating member connected to each said blocking element and projecting into the path of movement of said transport element so that immediately before taking along a filter plate said transport element engages the actuating member associated with that filter plate and through said actuating member pivots its blocking element into said release position, and

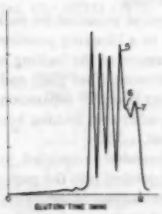
(c) each said locking hook having an oblique under surface in position to engage said locking bolt for separation of said locking hook from its associated locking bolt when said blocking element is in said release position.

4,486,307
FILTER APPARATUS HAVING FILTER BED BACK-WASHING MEANS
Walter Weiler, Diez, Fed. Rep. of Germany, assignor to Passavant-Werke AG & Co. KG, Fed. Rep. of Germany
Filed Sep. 13, 1982, Ser. No. 417,033
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138676
Int. Cl.³ B01D *23/24*
U.S. Cl. 210—275 8 Claims



1. The combination with filter apparatus embodying a basin connected to a crude water intake and having a liquid permeable bottom lying above a filtrate chamber and supporting a filter bed, the improvement in a back washing unit for the filter bed comprising: a raisable and lowerable suction bell connected to a suction unit, means for transporting said suction bell horizontally through the basin in a raised position above the filter bed, means for lowering said suction bell into an operable position within the filter bed to back-wash a partial volume of the filter bed by the suction action of said suction unit withdrawing filtrate from the filtrate chamber with the side walls of said suction bell defining division walls to compart the respective partial volume of the filter bed to be cleaned.

4,486,308
COLUMN PACKING MATERIAL AND PRODUCTION THEREOF
Osamu Hirai; Tetsuya Aoyama, and Yoshiyuki Mukoyama, all of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan
Filed Sep. 19, 1983, Ser. No. 533,581
Claims priority, application Japan, Sep. 24, 1982, 57-167362
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—502.1 3 Claims



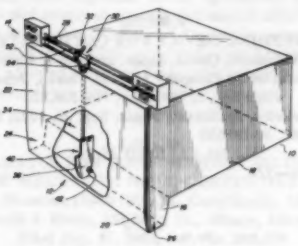
1. A liquid chromatographic column packing material comprising porous styrene-divinylbenzene copolymer particles having SO_3^- group, said copolymer particles having as counter ion of said SO_3^- group:

(a) at least one kind of ion selected from the group consisting of Ca^{++} and Sr^{++}, and

(b) at least one kind of ion selected from the group consisting of Pb^{++} and Ba^{++}

in an (a)/(b) equivalent ratio from $\frac{1}{4}$ to 2/1.

4,486,309
SLUDGE SHOVEL APPARATUS
Leander Krodel, 24 W. Ogden, Westmont, Ill. 60559
Filed Aug. 2, 1982, Ser. No. 404,042
Int. Cl.³ B01D *21/04*
U.S. Cl. 210—525 12 Claims



1. A sludge removal apparatus for a sedimentation tank having a trough generally transverse thereto and with a drop end and sludge removal end, comprising:

(a) a support beam traversing said tank and extending parallel to said trough;

(b) trolley means mounted to said beam and including means for reciprocally displacing said trolley means between said drop end and said sludge removal end;

(c) support and guide means secured to said trolley means and displaceable therewith and having an end thereof disposed within said trough;

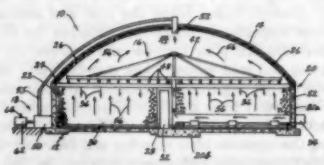
(d) slide means mounted on said support and guide means and being slidably displaceable along and parallel to said support and guide means;

(e) a sludge shovel secured to said slide means and displaceable therewith for scraping sludge in said trough when said slide means is at generally said an end;

(f) lever means pivotally mounted to said trolley means and including means connected to said slide means whereby pivoting of said lever means causes cooperative associated displacement of said slide means and said sludge shovel thereby; and,

(g) means for selectively pivoting said lever means.

4,486,310
WASTEWATER TRICKLING FILTER AIR RECIRCULATION PROCESS
Marvin L. Thornton, 509 SE. Fourth, Ankeny, Iowa 50021
Continuation of Ser. No. 472,964, Mar. 7, 1983, abandoned. This application May 30, 1984, Ser. No. 623,611
Int. Cl.³ C02F *3/04*
U.S. Cl. 210—604 1 Claim



1. A process for the controllable redistribution of air through a trickling filter system in a wastewater treatment facility in order to maintain the filter system in an operable temperature range, the trickling filter system having a holding tank housing

a filter medium therein and a dome, said dome attached to and overlaying the tank and defining a given area underneath, means for receiving wastewater into the tank and dispersal thereof over the filter medium and removal thereof from the tank, and a central gallery extending through the filter medium, an air recirculation system including an air blower, the blower communicating with the area under the dome and the central gallery, and discharge conduits, extending underneath the filter medium outwardly from and in communication with the central gallery having spaced apertures through which air may pass, the process comprising:

the recirculation of air thru the filter medium in response to the temperature of the filter medium in order to maintain the filter medium in a functionable temperature range.

4,486,311

METHOD FOR EFFECTIVE COMBINED USE OF GELS HAVING DIFFERENT ACTIVITIES

Shigeru Nakajima, Okayama, and Masahiko Ozaki, Ootsu, both of Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Continuation of Ser. No. 464,066, Feb. 4, 1983, abandoned. This application Mar. 14, 1984, Ser. No. 589,044

Claims priority, application Japan, Feb. 23, 1982, 57-28598

Int. Cl.³ B01N *15/08*

U.S. Cl. 210—635 **4 Claims**

1. A method of improving the separation performance of a column packed with a contaminated gel for liquid chromatography, said column having an inlet and an outlet for a liquid, which comprises removing the contaminated gel from the outlet side of said column for a length of 5 to 60% of the total packed length of said column, and packing the resultant void in said column with a fresh gel of the same type of activity, but higher activity, compared to the contaminated gel remaining in said column.

4,486,312

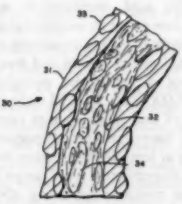
ANALYSIS OF LIQUID STREAMS USING TUBING WITH PROTUBERANCES ON ITS INNER WALL

Rosanne W. Slingsby, Pleasanton, and Christopher A. Pohl, Hayward, both of Calif., assignors to Dionex Corporation, Santa Clara, Calif.

Filed Aug. 12, 1983, Ser. No. 522,826

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—656 **5 Claims**



1. In a method for the analysis of constituents in a sample liquid stream, the step of flowing the liquid stream through at least one hollow tube with a wall including protuberances extending inwardly from the inside wall of the tube, said protuberances being spaced both circumferentially and axially and being of a character to disrupt laminar flow and to produce substantial turbulence during passage of the liquid through the tube, said tube wall and protuberances including ion exchange sites on their surfaces, said sample liquid stream including ions of the same charge as the exchangeable ions of said ion exchange sites, said sample liquid stream ions comprising one of the ions of an electrolyte using during liquid chromatography, the wall of the tube being preferentially permeable to ions of the same charge as the exchangeable ions of the ion exchange sites, the exchangeable ions of the ion exchange sites being in the form necessary to convert said electrolyte to a weakly ionized form.

4,486,313

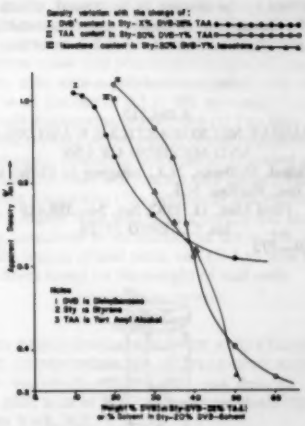
POLYMERICATION PROCESSES AND PRODUCTS THEREFROM

Erich F. Meitzner, Glenside, and James A. Oline, Wyncote, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 749,526, Jul. 18, 1958, Pat. No. 4,224,415. This application Jun. 2, 1980, Ser. No. 155,357

Int. Cl.³ B01J *39/04, 41/04*

U.S. Cl. 210—681 **9 Claims**



1. An improved method for treating a fluid containing an ionic solute to remove the same therefrom under oxidizing conditions or conditions of high physical stress or shock which comprises (A) contacting said fluid containing an ionic solute with beads of an ion exchange resin of macroreticular structure formed by functionalizing with an ion exchange functional group a suspension copolymer of (1) between about 4% and about 25% by weight of the monomer mixture of a polyvinylidene monomer containing plurality of ethylenically unsaturated groups in a non-conjucted relationship and (2) between about 96% and about 75% by weight of the monomer mixture of at least one monoethylenically unsaturated monomer, in a liquid which is a solvent for the monomer mixture and which does not swell the copolymer resulting from polymerization of the monomer mixture, said liquid and said polyvinylidene monomer being present in an amount sufficient to cause separation of the copolymer from the dissolved monomer phase, and (B) withdrawing said fluid from contact with the macroreticular ion exchange resin.

4,486,314

PROCESS FOR THE HANDLING OF WASTE WATERS

Edgar Küppelmann, Hilden; Gerd Krapp, Dusseldorf; Klaus Schumann, Erkrath, and Heinz G. Smolka, Langenfeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Fed. Rep. of Germany

PCT No. PCT/EP81/00004, § 371 Date Jun. 23, 1982, § 102(e) Date Jun. 23, 1982, PCT Pub. No. WO82/02542, PCT Pub. Date Aug. 5, 1982

Continuation of Ser. No. 395,011, Jun. 23, 1982, abandoned. This PCT application Jan. 21, 1981, Ser. No. 581,225

Int. Cl.³ C02F 1/56

U.S. Cl. 210—714 13 Claims

1. Process for the treatment of sewage precipitation using conventional precipitants selected from the group consisting of aluminum sulfate, iron sulfate, alkali metal silicates, and mixtures thereof and conventional flocculants selected from the group consisting of anionic or nonionic high-molecular acrylic polymers and polymeric basic aluminum salts, characterized in that, in addition to said conventional precipitants and said conventional flocculants in an amount sufficient to cause precipitation or flocculation of the solid matter in the sewage, from about 0.1 to 10 g per liter of sewage of an X-ray amorphous or crystalline, finely divided alkali metal and/or alkaline earth metal aluminosilicate of the formula:

$$x\ cat_{2/n}O.Al_2O_3.y\ SiO_2$$

where x has a value of 0.7 to 1.5, y a value of 0.8 to 6, cat denotes sodium, potassium, magnesium or calcium, and where n has the value of 1 or 2, and which preferably contains bound water; is added to the sewage to be treated, which has been adjusted, if necessary, to a weakly acid or a weakly alkaline pH-value, and that the deposit formed is separated from the water.

4,486,315

IMMUNOASSAY MICROPARTICLE WASHING SYSTEM AND METHOD OF USE

John W. Teipel, Skillman, N.J., assignor to Ortho Diagnostic Systems Inc., Raritan, N.J.

Filed Mar. 11, 1982, Ser. No. 358,419

Int. Cl.³ B01D 21/26

U.S. Cl. 210—772 10 Claims

1. A method of washing and collecting particles contained in a first fluid comprising the steps of:

in a system comprising an outer tube having an open top end and a closed bottom end and containing a second fluid having a density at the minimum substantially equal to that of the first fluid but no greater than that of the particles, an inner tube having an open top end and an open bottom end, barrier means located within said inner tube for sealing said first fluid from said second fluid but adapted to be upwardly displaced into the inner tube thereby substantially eliminating its sealing capacity for permitting movement of the particles from the first fluid into the second fluid when a force substantially greater than 1G is applied, said inner tube adapted for insertion into the open end of said outer tube; putting said first fluid into said inner tube;

inserting said inner tube into said outer tube;

applying force to said particles directed toward the bottom of said outer tube whereby the barrier means is upwardly displaced into the inner tube and unsealed, and the particles are caused to move from said first fluid to said second fluid and to move through said second fluid to the bottom of said outer tube; and finally

removing said inner tube, said first fluid and said second fluid.

4,486,316

BOREHOLE DRILLING FLUID AND METHOD

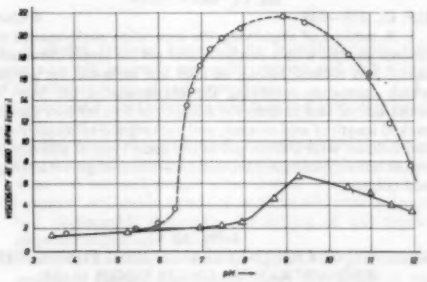
David B. Carriere, Greeley, Colo., and Rodrigue V. Lauzon, Seabrook, Tex., assignors to NL Industries, Inc., New York, N.Y.

Continuation of Ser. No. 8,758, Feb. 2, 1979, Pat. No. 4,301,016. This application Nov. 13, 1981, Ser. No. 320,872

The portion of the term of this patent subsequent to Nov. 17, 1998, has been disclaimed.

Int. Cl.³ C09K 7/02

U.S. Cl. 252—8.5 C 41 Claims



1. In a method for drilling a borehole wherein a drilling fluid is circulated within said borehole while drilling, the improvement comprising circulating in said borehole an aqueous composition containing an effective amount of an additive consisting of an emulsion polymerized interpolymer of an olefinically unsaturated carboxylic acid monomer selected from the group consisting of acrylic acid, methacrylic acid and mixtures thereof and at least one other non-carboxylated polymerizable monomer selected from the class consisting of methyl acrylate, ethyl acrylate, methyl methacrylate and mixtures thereof, said interpolymer having a molecular weight of from about 1,000,000 to about 4,000,000, the API apparent viscosity of an aqueous dispersion of said interpolymer containing 0.5 lbs. of polymer solids per barrel of said dispersion in a pH range above about 6 being at least 600% greater than the API apparent viscosity of said dispersion in a pH range below about 6, the pH of said aqueous composition being above about 7, said additive serving to viscosify said drilling fluid without the addition of a clay viscosifier.

4,486,317

STABILIZATION OF THICKENED AQUEOUS FLUIDS

Lionel S. Sandell, Hagerstown, Md., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 225,725, Jan. 16, 1981, Pat. No. 4,380,482. This application Sep. 7, 1982, Ser. No. 415,681

The portion of the term of this patent subsequent to Apr. 19, 2000, has been disclaimed.

Int. Cl.³ C06B 45/02; C09K 7/02; E21B 43/26

U.S. Cl. 252—8.5 A 15 Claims

1. A method of inhibiting the thermal degradation of a thickener for water in a polysaccharide-thickened or gelled aqueous

solution or slurry, said polysaccharide being selected from the group consisting of natural and derivatized galactomannans, derivatized cellulose and starch said method comprising incorporating in the solution or slurry a thermally stabilizing amount of iodide ion compound selected from the group consisting of hydriodic acid, ammonium iodide, an alkyl-substituted ammonium iodide, or an alkali metal or alkaline-earth metal iodide, iodate ion compound selected from the group consisting of iodic acid, ammonium iodate, an alkyl-substituted ammonium iodate, or an alkali metal or alkaline-earth metal iodate, or a combination of said iodide and iodate ion compound, said solution or slurry being devoid of gas bubbles formed (a) by the decomposition of hydrogen peroxide when the inhibitor contains iodide ion and (b) by the decomposition of a nitrogen compound when the inhibitor contains iodate ion; and the stabilizing amount of iodate ion being up to 0.3 percent of the weight of said solution or slurry; with the provisio that when said solution or slurry is thickened with an iodinated water-dispersible starch or gum, said solution or slurry is iodide-free and stabilized by incorporating iodate ion therein.

4,486,318

HIGH TEMPERATURE STABLE VISCOSIFIER AND FLUID LOSS CONTROL SYSTEM

Peter C. Green, Ellicott City, and Jacob Block, Rockville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 257,460, Apr. 24, 1981, Pat. No. 4,389,319. This application Jan. 27, 1983, Ser. No. 461,447

The portion of the term of this patent subsequent to Jun. 21, 2000, has been disclaimed.

Int. Cl.³ C09K *7/02*

U.S. Cl. 252—8.5 A **12 Claims**

1. A composition capable of imparting to clay-free aqueous systems a combination of pseudoplasticity and fluid loss control comprising a mixture of:

(a) a hydroxy containing aluminum component formed by mixing in an aqueous medium and under a high degree of agitation a water-soluble basic agent selected from the group consisting of an alkali metal aluminate, alkali metal hydroxide, ammonium hydroxide and mixtures thereof with a water-soluble acidic agent selected from an inorganic acid, aluminum chloride, aluminum sulfate, aluminum nitrate, their hydrates and mixtures thereof; at least one of said basic and acidic agents being an aluminum containing compound: said acidic and basic agents being reacted in a ratio such that the resultant product is capable of imparting to an aqueous medium a pH of at least about 8; in combination with

(b) a chemical compound capable of converting to a higher oxidation state under alkaline conditions selected from the group consisting of C_1–C_5 alkanols, unsubstituted or C_1–C_3 alkyl, aryl or alkaryl substituted phenols, hydroquinone, C_1–C_{15} alkanethial, alkali metal, alkaline earth metal or ammonium salt of sulfite, bisulfite and nitrite, ferrous metal salts of chloride and sulfate and cuprous metal salts of chloride and sulfate; in combination with

(c) a reaction product formed between a polymeric material having a weight average molecular weight of at least about 20,000 selected from the group consisting of polyvinyl alcohol and hydroxy C_1–C_3 alkyl cellulose and at least from about 0.1 to 200 percent of stoichiometry of a crosslinking agent selected from the group consisting of a compound containing at least one aldehyde group therein or a compound capable of generating in situ at least one aldehyde or an epihalohydrin; the reaction between said polymeric material and said aldehyde carried out in an aqueous acidic medium having a pH of 5.5 or less and the reaction between said polymer and said epihalohydrin being carried out in an aqueous basic medium having a pH of at least about 9.5;

wherein the weight ratio of component (a) to (c) is at least from about 0.1 to 20:1 and of component (b) to (c) is at least from about 0.2:1 to 1:1.

4,486,319

MICROPOROUS IONOMER POLYMER LUBRICATING COMPOSITION

Warren E. Jamison, Evergreen, Colo., assignor to Armco, Inc., Middletown, Ohio

Filed Sep. 27, 1982, Ser. No. 424,812

Int. Cl.³ C10M *1/26*

U.S. Cl. 252—12.2 **23 Claims**

1. A lubricating composition, comprising:

a microporous carrier having a polymer matrix formed from an ionomer polymer wherein said ionomer polymer has a melt flow index between about 0.5 and 10.0 grams per minutes; and

a liquid lubricant within said carrier.

4,486,320

TAPE GUIDE FOR MAGNETIC RECORDING TAPE CASSETTES AND MAGNETIC RECORDING TAPE CASSETTES CONTAINING SAME

Kiyoshi Sakurai; Akira Ishi, and Yoshihiro Abe, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 17, 1982, Ser. No. 389,359

Claims priority, application Japan, Jun. 17, 1981, 56-92217

Int. Cl.³ C10M *7/00*

U.S. Cl. 252—12.6 **8 Claims**

1. In a magnetic recording tape cassette provided with a tape guide, the improvement wherein the tape guide is composed of a composition comprising (1) an engineering plastic selected from the group consisting of polyphenylene sulfide resins, acrylonitrile-butadiene-styrene resins, polyamide resins, thermoplastic polyester resins, polysulfone, polycarbonate resins, polyphenylene oxide and polyoxymethylene, (2) an ester of a higher fatty acid with a polyhydric alcohol, said ester being contained in an amount of 0.3 to 5% by weight based on the weight of said engineering plastic, and (3) 5 to 50% by weight of carbon fibers based on the weight of said engineering plastic.

5. In a magnetic recording tape cassette provided with a tape guide, the improvement wherein the tape guide is composed of a composition comprising (1) a polyphenylene sulfide resin, (2) an ester of a higher fatty acid with a polyhydric alcohol, said ester being contained in an amount of 0.3 to 5% by weight based on the weight of said resin, and (3) 5 to 50% by weight of carbon fibers based on the weight of said resin.

4,486,321

FRICTION REDUCING ADDITIVES AND LUBRICATING OIL COMPOSITIONS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Mullica Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 10, 1983, Ser. No. 456,880

Int. Cl.³ C10M *1/54*

U.S. Cl. 252—46.3 **31 Claims**

1. A reaction product obtained by reacting a hydrocarbylamine having 10 to 30 carbon atoms with a mercaptan and an aldehyde, the reaction taking place at from about 80° to about 160° C. using ratios of amine:aldehyde:mercaptan of from about 1:1:0.5 to abut 1:1:1 and (2) reacting the resulting product at from about 90° C. to about 150° C. with a sufficient amount of boron compound to give from about 0.1% to about 10% of boron in the final product.

14. A lubricant composition comprising a major proportion of a lubricating oil or grease therefrom and a friction reducing amount of a reaction product obtained by reacting a hydrocarbylamine having 10 to 30 carbon atoms with a mercaptan and an aldehyde, the reaction taking place at from about 80° to about 160° C. using molar ratios of amine:aldehyde:mercaptan of from about 1:1:0.5 to abut 1:1:1 and (2) reacting the resulting product of from about 90° C. to about 150° C. with a sufficient amount of boron compound to give from about 0.1% to about 10% of boron in the final product.

4,486,322

TRIHYDROXYHYDROCARBYL SULFIDE AND LUBRICANTS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Mullica Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 18, 1982, Ser. No. 434,802
Int. Cl.³ C10M 1/38
U.S. Cl. 252—48.2 9 Claims

1. A lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease therefrom and a friction reducing amount of a composition of matter of the formula

$$(HO)_xRSR'(OH)_y$$

wherein R is a mixed C_{15} to C_{18} alkyl group, R' is a C_1 to C_{30} hydrocarbyl group, x is 0 to 3 and y is 0 to 3, the sum thereof being at least 3.

8. A composition of matter of the formula

$$(HO)_xRSR'(OH)_y$$

wherein R is a mixed C_{15} to C_{18} alkyl group, R' is a C_1 to C_{30} hydrocarbyl group, x is 0 to 3 and y is 0 to 3, the sum thereof being at least 3.

4,486,323

LUBRICANTS CONTAINING BORATED MIXTURES OF ALCOHOLS AND SULFIDES

Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Mullica Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 10, 1983, Ser. No. 456,917
Int. Cl.³ C10M 1/54
U.S. Cl. 252—48.4 23 Claims

1. A product of reaction made by reacting, at from about 90° C. to about 260° C., (1) a mixture of compounds of the formulas

$$RSCH(R_1)_xCH_2 \quad \text{and} \quad R_2(OH^3)_yOH$$
$$\quad\quad\quad | \quad\quad\quad\quad\quad\quad |$$
$$\quad\quad\quad OH \quad\quad\quad\quad\quad\quad OH$$

wherein R is a C_8 to C_{22} hydrocarbyl group, R_1 is an alkyl group having 1 to 2 carbon atoms, R^2 is an aliphatic group containing from 8 to 22 carbon atoms or mixtures thereof, R^3 is an alkylene group constaining 2 to 5 carbon atoms, x is 0 or 1 and y is 0 to 4, said mixture containing from about 5% to about 95% by weight of the sulfide and a complementary amount of the alcohol, with (2) an amount of a boron compound sufficient to borate at least about 5% of the hydroxyl groups present in said mixture.

4,486,324

HYDRAULIC FLUIDS

Philip S. Korosec, Ballwin, Mo., assignor to Edwin Cooper, Inc., St. Louis, Mo.

Filed Nov. 6, 1981, Ser. No. 318,744
Int. Cl.³ C10M 1/06
U.S. Cl. 252—49.3 14 Claims

1. A substantially oil free aqueous hydraulic fluid comprising (a) at least 80 weight percent water, (b) about 0.1–5 weight percent of a polyisobutenyl substituted succinic acid said polyisobutenyl substituent having a molecular weight of 700–5000, (c) about 0.1–5 weight percent of a zinc dihydrocarbyl dithiophosphate, (d) about 0.05–5 weight percent of a hydroxyalkyl amine, and (e) about 0.1–5 weight percent of a sodium alkylbenzene sulfonate.

4,486,325

HIGH-DENSITY INFORMATION DISC LUBRICANTS

Eugene S. Poliniak, Willingboro, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 30, 1984, Ser. No. 595,530
Int. Cl.³ C10M 1/10; B32B 3/02
U.S. Cl. 252—49.6 6 Claims

1. In a capacitive electronic disc having a lubricant coating thereon, the improvement wherein said lubricant includes an effective amount of a chlorophenyl trialkoxysiloxane as a dopant.

4,486,326

COPPER COMPLEXES OF OXAZOLINES AND LACTONE OXAZOLINES AS LUBRICATING OIL ADDITIVES

Antonio Gutierrez, Mercerville; Darrell W. Brownawell, Scotch Plains, and Stanley J. Brois, Westfield, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 6, 1983, Ser. No. 529,391
Int. Cl.³ C10M 1/54
U.S. Cl. 252—49.7 7 Claims

1. A lubricating oil composition comprising a major amount of lubricating oil and a minor but varnish inhibiting and oxidation inhibiting amount of an oil soluble copper complex of an oil soluble hydrocarbon substituted mono- or bis-oxazoline or hydrocarbon substituted lactone oxazoline dispersant, the copper being present in said complex in an amount of about 0.2 to 2.0 wt% of said mono-oxazoline, bis-oxazoline or lactone oxazoline.

4,486,327

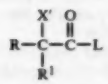
BODIES CONTAINING STABILIZED BLEACH ACTIVATORS

Alan P. Murphy; Ali Kassamali, both of Cincinnati, and John D. Curry, Oxford, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

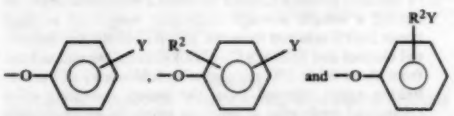
Filed Dec. 22, 1983, Ser. No. 564,785
Int. Cl.³ C11D 7/38, 7/54, 17/00
U.S. Cl. 252—94 17 Claims

1. A body containing a stabilized, particulate bleach activator comprising:

(a) from about 50% to about 99.5%, by weight of said body, of a bleach activator compound of the general formula



where R is a straight or branched alkyl or alkenyl group having from about 4 to about 14 carbon atoms, R^1 is H or C_2H_5, X' is Cl, OCH_3 or OC_2H_5 and L is a leaving group selected from



wherein R^2 is an alkyl chain containing from about 1 to about 8 carbon atoms, and Y is $-SO_3^-M^+$ or $-COO^-M^+$ wherein M^+ is sodium or potassium; and

(b) from about 2% to about 50% of a binder material selected from the group consisting of nonionic surfactants, polyethylene glycols, anionic surfactants, film forming polymers, fatty acids and mixtures thereof wherein said binder does not melt below about 40° C.;

wherein (a) and (b) are substantially evenly distributed

throughout said body, the density of said body is above about 1.06 g/cc and said body contains less than about 5% water.

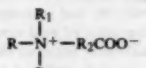
4,486,328

BETAINE-SOAP SHAMPOO COMPOSITION

Christine A. Knott, Manchester, and Joyce Ryan, Bolton, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed May 3, 1983, Ser. No. 491,010
Int. Cl.³ C11D 9/30, 1/84
U.S. Cl. 252—117 8 Claims

1. A mild, clear, liquid shampoo composition which is free of water-soluble, anionic, sulphonated and sulphated detergents and consists essentially of from 6% to 24% by weight of a mixture of a water-soluble zwitterionic detergent corresponding to the formula



wherein R is C_8–C_{18} alkyl or C_8–C_{18} alkanamido C_2–C_3 alkyl, R_1 is C_1–C_3 alkyl and R_2 is C_1–C_4 alkylene or C_1–C_4 hydroxyalkylene and a water-soluble salt of C_{10}–C_{18} carboxylic acid selected from the group consisting of sodium, potassium, ammonium and C_2–C_3 alkanolammonium salts, the mole ratio of said zwitterionic detergent to carboxylate being from 1.2:1 to 2.3:1; 1% to 8% by weight of C_8–C_{18} carboxylic acid C_2–C_3 alkanolamide; and an aqueous medium; said shampoo having a pH of from 7.5 to 9.

4,486,329

LIQUID ALL-PURPOSE CLEANER

Roger D. Ellis, Ramsbottom, England; Yvon Demangeon, Embourg, and Alain Jacques, Blegny, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,620
Int. Cl.³ C11D 1/831, 9/30
U.S. Cl. 252—117 12 Claims

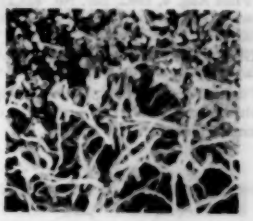
1. A clear, single-phase, liquid cleaning composition particularly suitable for cleaning hard surfaces which leaves a slight visible residue on unrinsed, cleaned surfaces consisting essentially of, by weight, (A) 2% to 8% of a water-soluble mino-, di-, or triethanolamine or ethylene diamine salt of an anionic sulfated or sulfonated detergent containing an alkyl radical of 8 to 22 carbon atoms in the molecule; (B) 1% to 4% of a water-soluble alkyleneoxylated nonionic detergent selected from the group consisting of condensates of C_8–C_{18} alkanol with 2 to 15 moles of ethylene oxide, condensates of C_6–C_{12} alkylphenol with 5 to 30 moles of ethylene oxide and condensates of C_{10}–C_{16} alkanol with a heteric mixture of ethylene oxide and propylene oxide in a weight ratio of 5:1 to 1:5 with the total alkylene oxide content being 60% to 85% by weight, the weight ratio of said sulfated or sulfonated detergent to nonionic detergent being from 0.5:1 to 6:1; 2% to 15% of a water-soluble mono-, di-, or tri-ethanolamine or ethylene diamine salt of a C_1–C_3 monocarboxylic acid builder, the weight ratio of builder to total detergent being in the range of 1:6 to 5:1; 0.1% to 4% by weight of mono-, di- or tri-ethanolamine or ethylene diamine; 0–2% of a water-soluble, mono-, di- or tri-ethanolamine or ethylene diamine salt of C_8–C_{18} carboxylic acid; 0–8% of urea; and water.

4,486,330

CLEANING COMPOSITION FOR ARTIFICIAL DENTURES

Akiyoshi Yoshida, Nara; Shigeru Kametaka, and Shin'ichi Hayashi, both of Osaka, all of Japan, assignors to Rohto Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jan. 27, 1983, Ser. No. 461,356
Claims priority, application Japan, Feb. 3, 1982, 57/16100
Int. Cl.³ A16K 7/30; C11D 7/42
U.S. Cl. 252—174.12 2 Claims



1. A composition suitable for removing *Candida albicans* from artificial dentures which comprises a β-1,3-glucanase and a buffer; said β-1,3-glucanase and buffer being contained in the composition in such amounts that an aqueous solution thereof with a predetermined amount of water has a β-1,3-glucanase concentration of at least about 0.3 unit/ml and a pH of from about 5 to 8, wherein the β-1,3-glucanase is EC 3.2.1.6, EC 3.2.1.39, or derived from microorganisms selected from the group consisting of Arthrobacter luteus, Achromobacter iunatus, Bacillus subtilis, Aspergillus nigar, Rhizoctonia solani and Physarum polycephalum

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4,486,331

AQUEOUS STABLE SUSPENSION OF WATER INSOLUBLE SILICATE CAPABLE OF BINDING CALCIUM IONS AND ITS USE FOR THE PRODUCTION OF WASHING AND CLEANSING AGENTS

Manifred Diehl, Frankfurt am Main; Roland Bergmann, Hanau, and Günter Stadtmüller, Alzenau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 15, 1983, Ser. No. 475,394
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1982, 3209631
Int. Cl.³ C11D 1/66, 1/72
U.S. Cl. 252—174.25 22 Claims

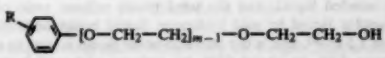
1. An aqueous pumpable stable suspension of a water insoluble silicate capable of binding calcium ions which contains, based on the total weight of the aqueous suspension

(A) as the silicate capable of binding calcium 0.5 to 80 weight percent of a finely divided, crystalline, bound water containing, synthetically produced water insoluble zeolite A of the formula

$$(Cat_{2/n}O)_x \cdot Al_2O_3 \cdot (SiO_2)_y \qquad (I)$$

in which Cat is a cation exchangeable with calcium and which has the valence n, x is a number from 0.7 to 1.5, y is a number between 1.3 and 4, and

(B) as a dispersingly active component 0.5 to 6 weight percent of a mixture of two different alkylphenolethoxylates of the formula



(II)

where R is an alkyl group of 1 to 5 carbon atoms, wherein the ratio of the two alkylphenolethoxylates is from 1:9 to

9:1 and wherein in one of the alkylphenolethoxylates m is 2 to 7 and in the other m is 8 to 15.

4,486,332

LIQUID CRYSTALLINE NEMATIC SUBSTANCES

Dietrich Demus; Horst Zaschke, both of Halle; Hans-Matthias Vorbrodt, Quedlinburg, and Sylvia Deresh, Barleben, all of German Democratic Rep., assignors to VEB Werk für Fernsehelektronik im VEB Kombinat Mikroelektronik, Berlin-Oberschoeneweide, German Democratic Rep.

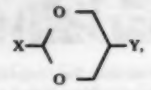
Filed Aug. 4, 1982, Ser. No. 405,214

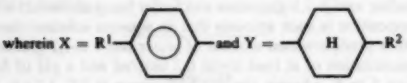
Claims priority, application German Democratic Rep., Aug. 18, 1981, 232636

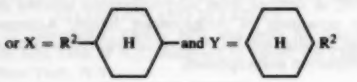
Int. Cl.³ G02F 1/13; C09K 3/34; C07D 319/06, 319/04

U.S. Cl. 252—299.61 12 Claims

1. A liquid crystal nematic composition, comprising at least one 2,5-di-substituted cyclohexyl derivative of 1,3-dioxane having the general formula:







wherein:

$R^1 = C_nH_{2n+1}$; $C_nH_{2n+1}O$; $C_nH_{2n+1}COO$; CN; NO_2; F; Cl; Br

$R_2 = C_nH_{2n+1}$ and n = 1 to 9 and mixtures of said derivatives.

4,486,333

PREPARATION OF BILIQUID FOAM COMPOSITIONS

Felix Sebba, 711 Crestwood Dr., Blacksburg, Va. 24060

Filed Mar. 23, 1982, Ser. No. 361,058

Claims priority, application South Africa, Apr. 10, 1981, 81/2413

Int. Cl.³ B01J 13/00

U.S. Cl. 252—307 26 Claims

1. A method of preparing a biliquid foam composition, which comprises agitating a hydrogen bonded liquid containing a surfactant, which is soluble in it, to produce a gas foam, intermittently adding to said gas foam a non-polar liquid which is immiscible with said hydrogen bonded liquid, the surfactant-containing hydrogen bonded liquid and non-polar liquid being selected to provide a spreading coefficient equal to or greater than zero, and agitating the resulting mixture after each addition so as to cause said non-polar liquid to initially spread on the foam surfaces and thereafter form non-coalescing globules of non-polar liquid dispersed in a continuous phase of said hydrogen bonded liquid and each encapsulated in a double surfaced surfactant-stabilized film of said hydrogen bonded liquid containing said soluble surfactant, the quantity of non-polar liquid added at each addition being such that after each agitation all of it has been encapsulated by the said film so that there is no excess of unencapsulated non-polar liquid so that the encapsulated globules are surrounded only by said hydrogen bonded liquid, and the total phase volume ratio of said non-polar liquid to said hydrogen liquid being between the limits 1.5 to 49, that is the said non-polar liquid is used in a total amount 60% to about 98% by volume and said hydrogen bonded liquid is used in an amount of about 40% to about 2% by volume, the quantity of non-polar liquid added at each addition being not more than about 15% by volume of the total amount of non-polar liquid to be added.

19. A method of preparing a biliquid foam composition starting with a previously prepared biliquid foam composition, said biliquid foam composition comprising a discontinuous phase of a non-polar liquid in the form of non-coalescing globules dispersed in a continuous phase of a hydrogen-bonded liquid, which is immisible with said non-polar liquid, and contains a surfactant, which is soluble in it, each said globule being encapsulated in a double surfaced surfactant-stabilized film of said hydrogen bonded liquid containing said soluble surfactant, which method comprises diluting said previously prepared biliquid foam composition with a predetermined quantity of said surfactant-containing hydrogen bonded liquid, intermittently adding to the diluted biliquid foam composition said non-polar liquid and agitating the resulting mixture after each addition so as to cause said non-polar liquid to initially spread on the globule surfaces and thereafter form additional said encapsulated globules, the quantity of non-polar liquid added at each addition being such that after each agitation all of it has been encapsulated by the said film so that there is no excess of unencapsulated non-polar liquid so that the encapsulated globules are surrounded only by said hydrogen bonded liquid and the total phase volume ratio of said non-polar liquid to said hydrogen bonded liquid being between the limits 1.5 to 49, that is the said non-polar liquid is used in a total amount of about 60% to about 98% by volume and said hydrogen bonded liquid is used in an amount of about 40% to about 2% by volume, the quantity of non-polar liquid added at each addition being not more than about 15% by volume of the total amount of non-polar liquid to be added.

4,486,334

METHOD FOR THE PREPARATION OF AN AQUEOUS DISPERSION OF PEARLESCENT AGENT

Teruo Horiuchi, Sayama; Nobuo Jona, Funabashi; Kazuo Ohbu, Yokohama, and Naoki Mizushima, Ichikawa, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Mar. 26, 1982, Ser. No. 362,535

Claims priority, application Japan, Apr. 3, 1981, 56-50296

Int. Cl.³ B01J 13/00; C09K 3/34

U.S. Cl. 252—312 9 Claims

1. A method for the preparation of an aqueous dispersion of pearlescent agent which comprises the steps of: (a) solubilizing 3 to 45% by weight, based on the resulting mixture, of an organic compound pearlescent agent having a melting point of 50 to 80° C. and capable of forming thin leaf crystals, in an aqueous solution of a surfactant at least a substantial portion of which forms the state of the middle phase (M_1 phase) liquid crystals, at a temperature higher than the melting point of the pearlescent agent to give a uniform aqueous mixture, and (b) cooling the uniform aqueous mixture to crystallize out the pearlescent agent in the mixture while the state of the middle phase (M_1 phase) liquid crystals of the surfactant is kept substantially unchanged.

7. A method for the preparation of an aqueous dispersion of a pearlescent agent which comprises the steps of: (a) solubilizing 3 to 80 parts by weight of an organic compound pearlescent agent having a melting point of 50 to 80° C. and capable of forming thin leaf crystals, in 100 parts by weight of an aqueous solution of an anionic surfactant at least a substantial portion of which forms the state of the middle phase (M_1 phase) liquid crystals, at a temperature higher than the melting point of the pearlescent agent to give a uniform aqueous mixture, and (b) cooling the uniform aqueous mixture to crystallize out the pearlescent agent in the mixture while the state of the middle phase (M_1 phase) liquid crystals of the surfactant is kept substantially unchanged.

8. A method for the preparation of an aqueous dispersion of pearlescent agent which comprises the steps of: (a) solubilizing 3 to 50 parts by weight of an organic compound pearlescent agent having a melting point of 50 to 80° C. and capable of forming thin leaf crystals, in 100 parts by weight of an aqueous

solution of a cationic surfactant at least a substantial portion of which forms the state of the middle phase (M_1 phase) liquid crystals, at a temperature higher than the melting point of the pearlescent agent to give a uniform aqueous mixture, and (b) cooling the uniform aqueous mixture to crystallize out the pearlescent agent in the mixture while the state of the middle phase (M_1 phase) liquid crystals of the surfactant is kept substantially unchanged.

9. A method for the preparation of an aqueous dispersion of pearlescent agent which comprises the steps of: (a) solubilizing 3 to 60 parts by weight of an organic compound pearlescent agent having a melting point of 50 to 80° C. and capable of forming thin leaf crystals, in 100 parts by weight of an aqueous solution of an amphoteric or a nonionic surfactant at least a substantial portion of which forms the state of the middle phase (M_1 phase) liquid crystals, at a temperature higher than the melting point of the pearlescent agent to give a uniform aqueous mixture, and (b) cooling the uniform aqueous mixture to crystallize out the pearlescent agent in the mixture while the state of the middle phase (M_1 phase) liquid crystals of the surfactant is kept substantially unchanged.

4,486,335

CARBOXYMETHYL HYDROXYETHYL CELLULOSE COMPOSITION

Thomas G. Majewicz, Chadds Ford, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 30, 1982, Ser. No. 412,654
Int. Cl.³ C08L *1/26*; E21B *43/26*; C09K *7/02*
U.S. Cl. 252—315.3 **8 Claims**

1. A crosslinkable carboxymethyl hydroxyethyl cellulose composition containing essentially of (a) a carboxymethyl hydroxyethyl cellulose having a carboxymethyl degree of substitution from about 0.1 to 0.19 and a hydroxyethyl molar substitution of greater than about 1.0, and (b) an ionic agent containing an aluminum ion in the form of an aluminum salt.

4,486,336

SILICONE FOAM-SUPPRESSANT COMPOSITIONS

Peter G. Pape, Sanford, and David N. Willing, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 26, 1983, Ser. No. 498,378
Int. Cl.³ B01D *19/04*; C09B *67/00*; D06P *1/673*
U.S. Cl. 252—321 **14 Claims**

1. A foam suppressant composition consisting essentially of

(A) from about 75% to about 99%, by weight, based on the total weight of the composition, of α,ω-bis-(trimethylsiloxy) polydimethylsiloxane having a viscosity of from about $5.00\times10^{-3}m^2$/second to about $2.00\times10^{-1}m^2$/second at 25° C.,

(B) from about 0.75% to about 18.75%, by weight, based on the total weight of the composition, of α,ω-bis-(trimethylsiloxy) polydimethylsiloxane having a viscosity of from about $1.00\times10^{-5}m^2$/second to about $1.50\times10^{-3}m^2$/second at 25° C.,

(C) from about 0.02% to about 2.5%, by weight, based on the total weight of the composition, of a siloxane resin composed of $(CH_3)_3SiO_{\frac{1}{2}}$ units and SiO_2 units, wherein the ratio of $(CH_3)_3SiO_{\frac{1}{2}}$ units to SiO_2 units is from about 0.4:1 to about 1.2:1, and

(D) from about 0.10% to about 3.75%, by weight, based on the total weight of the composition, of amorphous silica, said silica having a surface area of from about 50 m^2/g to about 400 m^2/g.

4,486,337

2-METHYL-2-BUTEN-1-YL TIGLATE AS ODORANT OR FLAVORANT

Dietmar Lamparsky, Wangen, Switzerland, and Roman Kaiser, Clifton, N.J., assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 52,175, Jun. 26, 1979,. This application Mar. 9, 1981, Ser. No. 242,092
Claims priority, application Switzerland, Jun. 28, 1978, 7037/78
Int. Cl.³ C11B *9/00*
U.S. Cl. 252—522 R **2 Claims**

2. A process for the perfuming of compositions or for the modification of the odor of odorant compositions, which process comprises incorporating an organoleptically effective amount of 2-methyl-2-buten-1-yl tiglate in said compositions.

4,486,338

LIQUID DETERGENT COMPOSITION CONTAINING SUCCINIC ACID DERIVATIVES

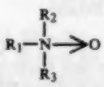
Naoteru Ootani, Funabashi; Takashi Ishii, Miyashiro, and Hiroshi Ikeda, Sakura, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Apr. 28, 1983, Ser. No. 489,352
Claims priority, application Japan, May 11, 1982, 57-77577
Int. Cl.³ C11D *1/04, 1/22*
U.S. Cl. 252—545 **8 Claims**

1. A liquid detergent composition comprising the following ingredients (A), (B) and (C):

(A) 10–40% by weight of at least one kind of anionic surface active agent selected from the group consisting of polyoxyethylenealkylethersulfate, alkylbenzenesulfonate, α-olefinsulfonate, alkanesulfonate and ethercarboxylate.

(B) 0.2–10% by weight of a tertiary amine oxide represented by the following formula (I),



(I)

wherein R_1 represents an alkyl group or alkenyl group having 10–18 carbon atoms, R_2 and R_3 independently represent an alkyl group having 1–2 carbon atoms,

(C) 0.2–5% by weight of a succinic acid derivative represented by the following formula (II),

(II)

wherein R_4 represents an alkyl group or alkenyl group having 4–8 carbon atoms, X and Y independently represent a hydrogen atom, alkali metal, ammonium or a water-soluble alkanolamine.

4,486,339

SEQUESTERING AGENT

Richard G. Young, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 4, 1982, Ser. No. 405,219
Int. Cl.³ C11D *3/26, 3/33*
U.S. Cl. 252—546 **5 Claims**

1. A sequestering agent comprising by weight from about 2 percent to about 20 percent iminodiacetic acid or a water-soluble salt thereof and from about 98 percent to about 80 percent nitrilotriacetic acid or a water-soluble salt thereof.

4,486,340

TREATMENT OF WATER THICKENED SYSTEMS

Joseph E. Glass, Jr., Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 176,359, Aug. 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 27,058, Apr. 4, 1979, abandoned, which is a continuation of Ser. No. 806,719, Jun. 15, 1977, abandoned. This application Jun. 24, 1982, Ser. No. 391,953

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **17 Claims**

1. In the process to effect enhanced recovery of oil from a subterranean reservoir with an aqueous driving medium whose viscosity has been increased by providing a water-soluble polysaccharide polymeric mobility control agent to the medium, the improvement which comprises providing an amine in the medium in the reservoir in an amount of between about 0.0001 to about 1.0 weight percent of the medium, which amine is one of an alkylene polyamine, an alkanol amine, an alicyclic polyamine, or a mixture of two or more of them, the aforesaid amines being selected such that when added at 300 ppm concentration in a hydroxyethylcellulose medium having a 90 cps viscosity and the medium temperature is maintained at 35° C. a medium is achieved which retains at least 60% of its measured viscosity after 24 hours and thereafter there is less than 30% additional measured viscosity loss at the end of 10 days, the O_2 concentration of the medium being reduced to approximately 1 ppm by nitrogen purging prior to addition of the hydroxyethylcellulose polymer, and sodium sulfite or sodium dithionite at 25 ppm and 5 ppm concentration, respectively, is post-added to the medium at ambient temperature after addition of said hydroxyethylcellulose polymer and said amines.

4,486,341

FRACTIONATION OF BLOOD PLASMA

Chong E. Chang, La Canada, Calif., assignor to Alpha Therapeutic Corporation, Los Angeles, Calif.

Filed Jun. 28, 1982, Ser. No. 393,030

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—112 B **32 Claims**

1. A process for recovering a selected protein fraction from a solution containing proteins, the process comprising the steps of:

providing a suspension containing a precipitation agent and precipitated particles of a selected protein fraction in a suspension tank;

maintaining the suspension at a selected pH, temperature, and precipitation agent concentration for selectively precipitating the selected protein fraction;

withdrawing a portion of the suspension from the suspension tank to form a recycle stream;

mixing a protein solution comprising proteins of the selected protein fraction directly into the recycle stream to thereby form a mixed recycle stream, whereby at least a portion of the selected fraction proteins in the protein solution precipitate onto previously precipitated selected protein fraction particles suspended in the mixed recycle stream;

introducing the mixed recycle stream back into the suspension tank;

withdrawing a portion of the suspension from the suspension tank in a product stream; and

recovering from the product stream the precipitated selected protein fraction particles.

17. A continuous multi-stage process for separation of protein fractions from blood plasma, comprising the steps of:

in a first stage:

spraying a selected amount of a precipitation agent into a suspension tank containing a suspension comprising Fraction I protein particles precipitated from blood plasma;

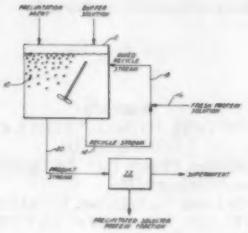
mixing the precipitation agent with the suspension in the suspension tank;

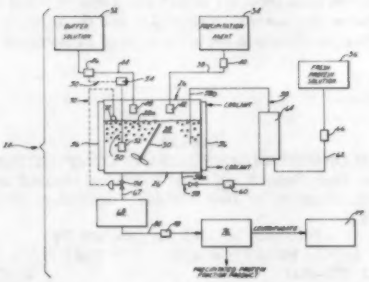
monitoring the pH and temperature of the suspension in the suspension tank;

spraying a buffer solution into the suspension tank and mixing the buffer solution into the suspension for maintaining the pH of the suspension at a selected value;

continuously withdrawing a portion of the suspension from the suspension tank to thereby form a recycle stream;

continuously introducing a selected amount of fresh blood plasma containing Fraction I proteins directly into the recycle stream and mixing the fresh blood plasma and recycle stream together to thereby form a mixed recycle stream, the temperature of the suspension sufficient to provide the mixed recycle stream at a selected temperature so that at least a portion of the Fraction I proteins contained in the fresh blood plasma precipitate





onto previously precipitated Fraction I particles suspended in the mixed recycle stream;

continuously introducing the mixed recycle stream back into the suspension tank;

continuously withdrawing a portion of the suspension from the suspension tank in a first stage product stream;

separating from the first stage product stream the precipitated Fraction I protein particles and a supernatant liquid comprising Fraction II/III proteins;

and in a second stage:

introducing the supernatant liquid from the first stage into the recycle stream of the second stage, wherein the second stage recycle stream comprises a suspension of Fraction II/III protein particles and is at a pH, temperature, and precipitation agent concentration for selectively precipitating Fraction II/III protein particles for recovery of the Fraction II/III proteins.

4,486,342

RECOVERY OF PROTEIN USING SHEAR

George F. Bateson, Roseville; Douglas Arndt, Champlin, and Steven R. Boyer, St. Paul, all of Minn., assignors to Henkel Corporation, Minnesapolis, Minn.

Filed Mar. 16, 1983, Ser. No. 475,803
Int. Cl.³ A23J *1/14, 1/12*
U.S. Cl. 260—112 G 12 Claims

1. A process for agglomerating protein from cereal grain or soy beans comprising subjecting a protein concentrate which is a mixture of starch, protein and water to a shear to assist in agglomerating the protein wherein the maximum shear rate is not greater than 2000 reciprocal seconds and the protein concentrate during the shear is subjected to a gap of 2.28 mm or less to cause the protein to agglomerate.

4,486,343

PROTEIN ISOLATES AND METHOD OF PRODUCING THEM

Neil J. Walker, Sebastopol, Calif., and Philip B. Connolly, North Nowra, Australia, assignors to New Zealand Milk Products, Inc., Petaluma, Calif.

Continuation-in-part of Ser. No. 410,057, Aug. 20, 1982, abandoned, which is a continuation of Ser. No. 259,440, May 1, 1981, abandoned. This application Mar. 21, 1983, Ser. No. 477,509
Int. Cl.³ A23J *3/00*
U.S. Cl. 260—112 G 10 Claims

1. A method of producing wheat protein comprising dispersing wheat protein, selected from the class consisting of vital wheat gluten and wheat flour, in water at a temperature of about 5°–35° C. and a concentration of about 2–20% protein, reducing the pH of the dispersion to about 0.5–3.0, heating the dispersion to a temperature of from about 70° C. for about 65 mins.–4 hours to about 120° C. for about 30 secs.–5 mins. to solubilize the protein, and adjusting the pH to about 3.5–6.0 to precipitate wheat protein, wherein heating above 100° C. is carried out under high temperature short time conditions.

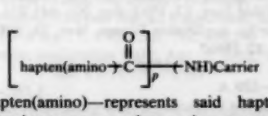
4,486,344

UREA-LINKED IMMUNOGENS, ANTIBODIES, AND PREPARATIVE METHOD

Robert T. Buckler, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 28, 1983, Ser. No. 479,757
Int. Cl.³ A61K *37/04, 39/00*
U.S. Cl. 260—121 9 Claims

1. An immunogen conjugate for use in preparing antibodies against a particular hapten which contains a primary or secondary amine group, which conjugate is of the formula:



wherein hapten(amino)—represents said hapten coupled through said primary or secondary amine group, —(NH)Carrier represents an immunogenic protein or polypeptide coupled directly through amino groups thereon, whereby said amine-containing hapten is coupled to said Carrier through a urea linkage, and p is on the average from 1 to the number of available amino groups on Carrier.

4,486,345

PROCESS FOR OBTAINING A GEL-FORMING PROTEIN PRODUCT

Danilo F. Callewaert, Ledegem, Belgium, assignor to N.V. Safinco, Izegem, Belgium

Continuation of Ser. No. 99,153, Nov. 30, 1979, abandoned. This application Nov. 5, 1982, Ser. No. 440,195
Claims priority, application United Kingdom, Dec. 12, 1978, 48116/78
Int. Cl.³ A23J *1/14*
U.S. Cl. 260—123.5 13 Claims

1. A process for preparing a gel-forming protein product from a raw material of either defatted or non-defatted oil seeds or products derived therefrom, wherein said seeds and products derived therefrom are comprised of proteins and carbohydrates including sugars and a polysaccharide fraction, said process comprising:

comminuting and homogenizing the raw material in the presence of water;

separating a fraction consisting essentially of polysaccharide from a protein solution in the resulting homogenized aqueous suspension by centrifugal separation or sieving; and

subjecting the resulting protein solution to one or more stages of a thermal treatment in water at a temperature above 50° C. for a time sufficient to convert the proteins into a gel-forming product, one of the said stages consisting of spray drying said protein solution, the pH of the water being maintained at at least 1 pH unit above the highest isoelectric point of the proteins.

4,486,346

COLOR REDUCTION PROCESS FOR NON-SULFONATED LIGNIN

Peter Dilling, Isle of Palms, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 31, 1983, Ser. No. 547,119
Int. Cl.³ C07G *1/00*
U.S. Cl. 530—501 9 Claims

1. A method for decolorizing non-sulfonated lignin in an alkaline pH media surfactants derived from kraft and sulfite pulping processes comprising the steps of

(a) reacting the lignin with from 0.1 to 5.0 moles formaldehyde per 1000 grams lignin,

(b) blocking at least 80% of the lignin's phenolic functions with one or more blocking agents, and

(c) oxidizing the blocked lignin with 0.1 to 8 moles chlorine dioxide per 1000 grams of lignin.

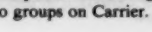
4,486,347

FLAME RETARDING ANTIMICROBIAL HALOGENATED AZO DYESTUFFS

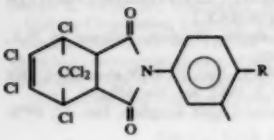
Irina N. Gorbacheva; Ljudmila M. Sukhova; Zinaida J. Kozinda; Vladislav L. Molokov, all of Moscow; Lev T. Antonov; Vadim D. Simonov, both of Ufa; Viktor A. Chertov, Moscow; Semen I. Dvoskin, Moscow, and Raisa S. Veseneva, Moscow, all of U.S.S.R., assignors to Tsentralny Nauchnoissledovatelsky Institut Shersti, U.S.S.R.

Continuation of Ser. No. 196,557, filed as PCT SU 79/00056 Jul. 13, 1979, published as WO 80/00570, Apr. 3, 1980, § 102(e) dated May 18, 1980, abandoned.
This application Jan. 22, 1982, Ser. No. 341,770
Claims priority, application U.S.S.R., Sep. 18, 1978, 2664359
Int. Cl.³ C09B *29/036, 31/14, 29/095, 29/30*
U.S. Cl. 534—797 6 Claims

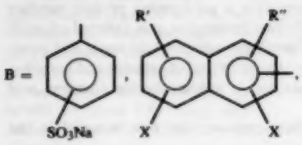
1. Halogenated azo dyestuff possessing flame-resistant and antimicrobial properties and being of the formula:

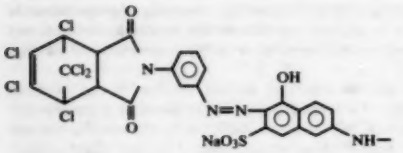


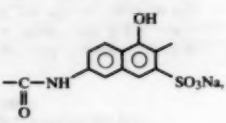
wherein

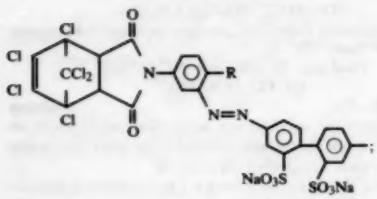


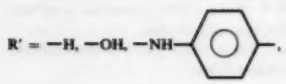
R = —CH_3, —OH; and











R′ = —H, —OH, —NH—,

R″ = —H, —NH_2, —SO_3Na;
X = —H, —SO_3Na.

4,486,348

CATIONIC TRIAZINE AZO DYES

Klaus Kunde, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

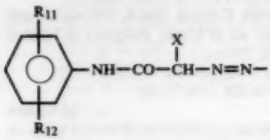
Continuation-in-part of Ser. No. 327,642, Dec. 4, 1981, abandoned. This application Feb. 24, 1984, Ser. No. 582,997

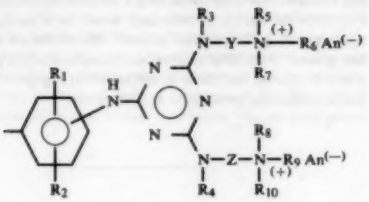
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3048997

Int. Cl.[3] **C09B** *44/18;* **D21D** *3/00;* **D21H** *3/80, 3/82*

U.S. Cl. 534—741 **4 Claims**

1. A dyestuff of the formula





wherein

R_{11} and R_{12} independently of one another are H, Cl, Br, OCH_3, OC_2H_5, CH_3 or C_2H_5,

X is a radical of the formula $COCH_3$, CN, $COOCH_3$, $COOC_2H_5$, $CONH_2$ or COC_6H_5,

Y and Z independently of one another are C_2–C_5-alkylene,

R_1 and R_2 independently of one another are H, Cl, Br, OCH_3, OC_2H_5, CH_3 or C_2H_5,

R_3 and R_4 indenpendently of one another are hydrogen or C_1–C_4-alkyl,

R_5–R_{10} independently of one another are hydrogen, C_1–C_4-alkyl, β- or γ-hydroxy-C_2–C_4-alkyl, phenyl or benzyl, or

R_5 and R_6, and/or R_8 and R_9 in each case together with the nitrogen, form a pyrrolidine, morpholine or piperidine ring, or

R_5, R_6 and R_7 and/or R_8, R_9 and R_{10}, in each case together with the nitrogen, form a pyridinium or picolinium radical, and

$An^{(-)}$ is an anion.

4,486,349

PROCESS FOR PREPARING PARA-QUINONE OR ORTHO-QUINONE DERIVATIVES, POSSIBLY ALKOXYLATED OR ARYLOXYLATED, RESPECTIVELY FROM THE CORRESONDING HYDROQUINONE OR PYROCATECHIC DERIVATIVES

Michel Maumy, Bois Colombes; Patrice J. G. Capdevielle; Philippe L. Dostert, both of Paris, and Michel Langlois, Buc, all of France, assignors to Delalande, S.A., France

Filed Nov. 12, 1982, Ser. No. 441,273

Claims priority, application France, Nov. 18, 1981, 81 21606; Nov. 5, 1982, 82 18607

Int. Cl.[3] **C07C** *50/04, 50/06*

U.S. Cl. 260—239 A **13 Claims**

1. A process for preparing a para-quinone or ortho-quinone derivative respectively from the corresponding hydroquinone or pyrocatechic derivative, characterized in that it consists in oxidizing said hydroquinone or pyrocatechic derivative by means of the complex prepared, in situ or separately, by combining a cuprous salt, a hydrocarbon substituted by a cyano group and molecular oxygen.

4,486,350

PROCESS FOR THE PREPARATION OF SULPHUR DYESTUFFS OF THE PHTHALOCYANINE SERIES

Wolfgang Bauer, Maintal; Klaus Kühlein, Kelkheim, and Gert Nagl, Niederdorfelden, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,691

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 3216125

Int. Cl.³ C09B *47/04, 47/30*

U.S. Cl. 260—245.86 15 Claims

1. In the process for preparation of phthalocyanine sulphur dyestuffs by reducing phthalocyaninesulphochlorides of the formula

$$Pc(SO_2Cl)_n$$

wherein Pc is a metal-free or metal-containing phthalocyanine moiety and n is an integer from 1 to 4, the improvement comprises reducing said phthalocyaninesulphochlorides in the presence of hydriodic acid and a reducing agent which converts iodine into hydriodic acid with the proviso that said reducing agent is other than a free metal.

4,486,351

USE OF POLYMERIC ETHYLENE OXIDES IN THE PREPARATION OF GLYCIDYL AZIDE POLYMER

Robert A. Earl, Salt Lake City, Utah, assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 14, 1983, Ser. No. 561,394

Int. Cl.³ C07C *117/00*

U.S. Cl. 260—349 5 Claims

1. A process of preparing glycidyl azide polyether of improved purity, said process comprising:

a. forming a liquid reaction mixture consisting essentially of (i) polyethyleneoxide having a molecular weight between about 300 and 1000, (ii) sodium azide and (iii) polyepichlorohydrin having a molecular weight between about 500 and 10,000 wherein (i) and (iii) are miscible in each other at temperatures greater than about 80° C.;

b. forming said glycidyl azide polyether in a reacted mixture by heating said reaction mixture at a temperature between about 80° and 120° C. for a time sufficient for displacement of the chloro groups of said polyepichlorohydrin with azido groups;

c. removing said polyethyleneoxide from said reacted mixture by aqueous washings; and

d. isolating said glycidyl azide polymer from the washed product of c.

4,486,352

PROCESS FOR PREPARING 3ALPHA, 7BETA-DIHYDROXY-5BETA-CHOLANIC ACID

Claudio Giordano, Vicenza; Francesco Minisci, Milan; Mariano Meneghin, Revine-Lago, and Giulio Perdoncin, Vicenza, all of Italy, assignors to Zambon S.p.A., Cappuccini, Italy

Filed Apr. 1, 1983, Ser. No. 481,299

Claims priority, application Italy, Apr. 2, 1982, 20559 A/82

Int. Cl.³ C07J *71/00*

U.S. Cl. 260—397.1 2 Claims

1. Process for preparing 3 alpha, 7 beta-dihydroxy-5-beta-cholanic acid by the stereoselective reduction of 3-alpha-hydroxy-7-keto-5-beta-cholanic acid with sodium metal in ter.alkanols wherein for each mol of sodium metal are added from 0.1 to 10 mols of an organic salt of a metal selected from the group consisting of potassium, cesium and rubidium.

4,486,353

PROCESS OF EXTRACTING VEGETABLE OIL AND FAT

Narihide Matsuzaki, Yokohama; Tasuke Oshima, Kawasaki, and Akira Nishioka, Yokohama, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,235

Claims priority, application Japan, Sep. 4, 1981, 56-139534

Int. Cl.³ C11B *1/12*

U.S. Cl. 260—412.4 6 Claims

1. A process of extracting vegetable oil and fat from an oleaginous raw material, which comprises the steps of:

(a) obtaining flakes having a moisture content of from 0.7 to 10 weight % from an oleaginous raw material, said flake being characterized by the absence of an impervious outer hull or coat;

(b) contacting said flakes with an ethanol solution containing not less than 90 weight % ethanol at a temperature in the range from 70° C. to the boiling point of said ethanol solution, thereby obtaining a miscella,

(c) cooling said miscella, thereby obtaining vegetable oil or fat or both and a separate defatted miscella;

(d) drying said defatted miscella with a molecular sieve material having a pore size from 3Å to 4Å, thereby obtaining a second ethanol solution wherein said second ethanol solution contains less than 7 weight % water; and

(e) using said second ethanol solution as the ethanol solution of said contacting step in a second extraction.

4,486,354

SUBSTITUTED AROMATIC COMPOUNDS

Martin G. Baxter, 34 Whitehead Close, Wilmington, Dartford, Kent; Albert R. Elphick, 51 Baring Rd., Lee, London, SE. 12; Alistair A. Miller, 91 Elmshurst Gardens, Tonbridge, Kent, and David A. Sawyer, 60 Bourne Vale, Hayes, Kent, all of England

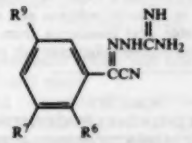
Continuation of Ser. No. 154,198, May 29, 1980, abandoned. This application Oct. 5, 1981, Ser. No. 308,805

Claims priority, application United Kingdom, Jun. 1, 1979, 7919257

Int. Cl.³ C07C *121/84*

U.S. Cl. 260—465 E 3 Claims

1. A compound of the formula (IV):



(IV)

wherein R^6 is a chlorine or bromine atom or is linked to R^7 to form a CH═CH—CH═CH— group, and R^7 and R^9 are hydrogen, chlorine or bromine provided that R^7 and R^9 cannot both be hydrogen.

4,486,355

HALOGENATED BENZYL ALCOHOLS AND HALIDES

Philip D. Bentley, Bracknell, and Nazim Punja, Crowthorne, both of England, assignors to Imperial Chemical Industries PLC, Hertfordshire, England

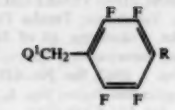
Division of Ser. No. 116,597, Jan. 28, 1980, Pat. No. 4,385,070. This application Apr. 25, 1983, Ser. No. 488,434

Claims priority, application United Kingdom, Feb. 14, 1979, 7905239; European Pat. Off., Jan. 18, 1980, 80300169.2; United Kingdom, Jan. 18, 1980, 8001693

Int. Cl.³ C07C *121/52, 49/327, 69/78*

U.S. Cl. 260—465 G 6 Claims

1. A compound of formula:



wherein R is cyano, trifluoromethyl, lower alkoxycarbonyl or lower alkylcarbonyl, and Q^1 is hydroxy, chloro or bromo.

4,486,356

PROCESS FOR PRODUCING N-PHOSPHONOMETHYLGLYCINE DERIVATIVES

Izhak Bakel, Ramat Gan, Israel, assignor to Geshuri Laboratories, Ltd., Tel-Mond, Israel

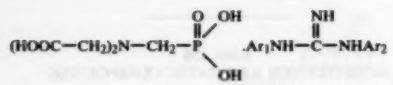
Filed Apr. 15, 1983, Ser. No. 485,501

Claims priority, application Israel, Jun. 25, 1982, 66137; Sep. 17, 1982, 66824

Int. Cl.³ C07C 9/38

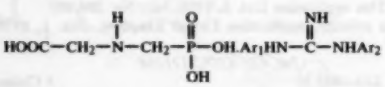
U.S. Cl. 260—501.12 **7 Claims**

1. A process for producing water-soluble mono and di-N-Phosphonomethylglycine amine and iminourea salts from N-phosphonomethyliminodiacetic acid derivatives comprising oxidizing an aryl substituted iminourea salt of N-phosphonomethyliminodiacetic acid of the formula VI



VI

wherein Ar_1 and Ar_2 are each independently selected from the group consisting of phenyl, alkylphenyl and halophenyl to form a N-phosphonomethylglycine iminourea salt of the formula VII



VII

reacting said salt of formula VII with an amine, iminourea, diamine, or diiminourea having a molecular weight below 600 and a pKa above 10 in aqueous solution and separating the resulting water insoluble aryl iminourea from the resulting water soluble N-phosphonomethylglycine salt product.

4,486,357

PROCESS FOR MAKING VINYLPHOSPHONIC ACID OR VINYLPYROPHOSPHONIC ACID

Werner Krause, Hürth, and Werner Pieper, Erftstadt, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 390,190, Jun. 21, 1982, abandoned. This application Feb. 21, 1984, Ser. No. 580,774

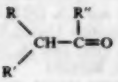
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125329

Int. Cl.³ C07F 9/38

U.S. Cl. 260—502.4 R **13 Claims**

1. A process for making phosphonic or pyrophosphonic acids from ketones, comprising:

reacting a ketone of the formula



in which

R and R′ are identical or different and stand for hydrogen or a halogen-substituted or unsubstituted alkyl group, aryl group, alkaryl group or aralkyl group having from 1 to 18 carbon atoms, and R″ stands for an alkyl group, aryl group, alkaryl group, or aralkyl group having from 1 to 18 l carbon atoms,

with tetraphosphorus hexoxide (P_4O_6) in the presence of at least 0.0001 weight %, based on the tetraphosphorus hexoxide, of a proton donor at elevated temperatures, and

obtaining a phosphonic or pyrophosphonic acid reaction product having a substituted vinyl group, the said substituted vinyl group being substituted by R″ on one of the carbons of the vinyl group, and, if R and R′ are not hydrogen, by R and R′, on the other carbon of the vinyl group.

4,486,358

PROCESS FOR PRODUCING N-PHOSPHONOMETHYLGLYCINE

Hans Moser, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

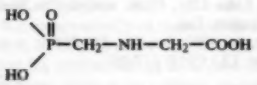
Continuation-in-part of Ser. No. 391,816, Jun. 24, 1982, abandoned, which is a continuation-in-part of Ser. No. 327,138, Dec. 3, 1981, Pat. No. 4,369,142. This application Nov. 19, 1982, Ser. No. 442,933

The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.

Int. Cl.³ C07F 9/38

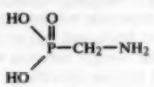
U.S. Cl. 260—502.5 F **7 Claims**

1. A process for producing N-phosphonomethylglycine of the formula I



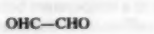
(I)

by reacting aminomethanephosphonic acid of the formula II



(II)

in an aqueous medium, with glyoxal of the formula III



(III)

in the presence of sulfur dioxide, said sulfur dioxide and glyoxal being simultaneously introduced into a suspension of said aminomethanephosphonic acid in water, and isolating the resulting product.

4,486,359

PROCESS FOR THE PREPARATION OF N-PHOSPHONOMETHYL-GLYCINE

Marta Brendel née Hajnóczki; Imre Gulyás; István Gyökér; Kálmán Zsupán, all of Tiszavasvári; István Csorvássy, Hajdunánás; Zoltán Salamon, Tiszavasvári; Gábor Somogyi, Tiszavasvári; István Szentkirályi, Tiszavasvári; Tibor Timár, Tiszavasvári; Éa Biró née Czapáry, Tiszavasvári; István Fodor, Tiszavasvári, and János Répási, Tiszavasvári, all of Hungary, assignors to Alkaloida Vegyeszeti Gyar, Tiszavasvári, Hungary

Continuation of Ser. No. 352,367, Feb. 25, 1982, abandoned, which is a continuation of Ser. No. 166,852, Jul. 8, 1980, abandoned. This application Oct. 20, 1983, Ser. No. 543,795

Claims priority, application Hungary, Jul. 9, 1979, AA-934

Int. Cl.³ C07F 9/38

U.S. Cl. 260—502.5 F **8 Claims**

1. A process for the preparation of N-phosphonomethyl-glycine which comprises:

(i) reacting glycine with paraformaldehyde in a molar ratio

of 1:1.8–2 in a reaction system consisting of a C_1–C_4 alkanol under anhydrous conditions using around 1.1–1.5 moles of glycine per liter of C_4–C_4 alkanol and an alkali compound selected from the group consisting of a tertiary amine and an alkali acetate wherein the molar ratio of the tertiary amine to glycine is about 0.94:1 and the molar ratio of the alkali acetate to glycine is 2:1 to obtain N,N-bis-hydroxymethyl-glycine;

(ii) reacting the thus obtained solution containing N,N-bis-hydroxymethyl-glycine at the pH thereof with a dialkyl phosphite whereby the molar ratio of glycine to dialkyl phosphite is about 1:1;

(iii) treating the reaction mixture thus obtained with hydrochloric acid under conditions sufficient to form an N-phosphonomethyl-glycine-alkyl ester; and

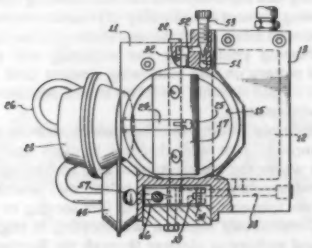
(iv) thereafter hydrolyzing the formed N-phosphonomethyl-glycine in the presence of hydrochloric acid and water.

4,486,360

CARBURETOR

Allan Elias, 6211 Yarrow Dr., Carlsbad, Calif. 92008, assignor to Allan Elias, Monpa, Nev.

Filed Jul. 1, 1982, Ser. No. 394,159
Int. Cl.³ F02M 7/22
U.S. Cl. 261—39 D **7 Claims**



1. In a carburetor having a fuel reservoir, a fuel nozzle, a first internal passage defining a fuel flow path between said fuel reservoir and said fuel nozzle with said passage having a first axial section and a second lateral section, a valve for controlling flow through said first passage with said valve axially movable in said axial section for controlling fuel flow through said axial section, a butterfly valve rod with an eccentric cam, and a cam follower lever driven by said cam for controlling said valve for moving said valve axially in said axial section over a continuous range of positions for varying the rate of flow of fuel to the carburetor,

an improved idle bypass in said valve for providing a constant and adjustable flow of fuel to the carburetor in conjunction with the flow of fuel through said valve, comprising in combination:

a sleeve mounted in said first axial section of said first passage, said sleeve having a second internal passage coaxial with said first axial section and with an axial opening with a valve seat and a lateral opening aligned with said second lateral section;

a piston slidingly positioned in said second internal passage of said sleeve for motion toward and away from said valve seat providing a variable range of spacings between said piston and said valve seat,

said piston having a third internal passage with an axial opening aligned with said axial opening of said sleeve and a lateral opening alignable with said lateral opening of said sleeve and said lateral section,

said piston including means engagable by said lever for moving said piston away from said valve seat, said piston having an inner end with a conical outer surface tapering toward said piston axial opening and a conical inner surface, with said piston lateral opening in said conical surfaces;

a spring urging said piston toward said valve seat whereby said lever and said spring cooperate to maintain said piston spaced relative to said valve seat over a continuous range of distances; and

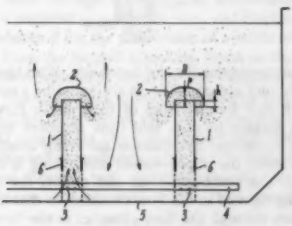
a plunger threadedly mounted in said third internal passage of said piston, with said plunger movable toward and away from said axial opening of said piston for adjustably controlling fuel flow through said third internal passage, said plunger having a cylindrical end with a flat face movable into said piston inner end opposite said piston lateral opening.

4,486,361

APPARATUS FOR INTRODUCING GAS INTO A LIQUID MASS

Jean Durot, Villepreux, and Ronald Moreau, Rueil Malmaison, both of France, assignors to Degremont, Rueil-Malmaison, France

Filed Dec. 30, 1980, Ser. No. 221,411
Claims priority, application France, Jan. 9, 1980, 80 00398
Int. Cl.³ B01F 3/04
U.S. Cl. 261—123 **14 Claims**



1. An apparatus for introducing gas into a liquid mass at a certain depth therein, said apparatus comprising:

a treatment tank containing therein a liquid mass to be treated;

a gas port positioned within said tank for discharging gas into said liquid mass;

a emulsifying tube vertically positioned within said liquid mass, said tube having extending vertically upwardly therethrough an emulsion passage having a substantially uniform inner size throughout the entire height thereof;

said tube having at a lower portion thereof means for receiving therein gas from said gas port and liquid from said liquid mass, such that said gas and liquid in the form of an emulsion flow upwardly through said tube;

said tube having at an upper portion thereof an overflow and means opening downwardly into said liquid mass for reversing the flow of said emulsion of gas and liquid and for then discharging substantially all of said gas and liquid downwardly into said liquid mass; and

said reversing and discharging means having vertically downwardly extending discharge surfaces defining a discharge opening, said reversing and discharging means being submerged within said liquid mass to a depth sufficient to ensure that said gas and liquid discharged thereby is directed substantially vertically downwardly into said liquid mass, to a depth below the surface thereof and toward the bottom thereof, the vertical spacing between said overflow and said opening being from 0 to 5% of the total height of said tube.

4,486,362

PROCESS AND ARRANGEMENT FOR THE FORMATION OF AN IGNITABLE MIXTURE FROM LIQUID FUEL AND COMBUSTION AIR

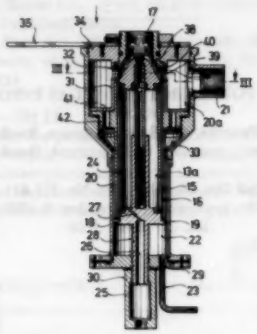
Siegfried Forster, Aisdorf; Hubert Jaegers, Jülich; Hans Kammerling, Eschevieler; Peter Quell, Aachen-Haareh, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Jülich, Fed. Rep. of Germany

Filed Jun. 7, 1982, Ser. No. 385,799

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1981, 3122770

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—138 **13 Claims**



2. In an arrangement for the formation of an ignitable mixture of liquid fuel and combustion air including a surface moistenable with fuel for the inlet of fuel; and a flow chamber having said surface therein, said flow chamber being passed through by preheated combustion air being conducted to a combustion zone; the improvement comprising in combustion air inlets for the combustion air and outlets for the fuel-air mixture being formed in the flow chamber so that the combustion air passes through the flow chamber in the flow direction of the fuel flowing off the moistened surface under the effect of gravity, a regulatable bypass being connected with the discharge for the fuel-air mixture communicating with the combustion air infeed ahead of the combustion air infeed connection with the flow chamber; a regulator for the combustion air which passes through said flow chamber and said bypass wherein said regulator includes means for preventing flow of the fuel-air mixture towards the fuel-air mixture outlet at a fully opened bypass; and a discharge for excess fuel in the flow direction of the fuel being arranged at the foot of the surface in said flow chamber moistened by the fuel.

4,486,363

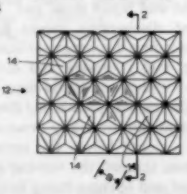
METHOD AND APPARATUS FOR EMBOSSING A PRECISION OPTICAL PATTERN IN A RESINOUS SHEET

Robert M. Pricone, Vernon Hills, and Sidney A. Heenan, Park Ridge, both of Ill., assignors to Amerace Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,860

Int. Cl.³ B29D *11/00*

U.S. Cl. 264—1.4 **22 Claims**



1. A method for continuously embossing a precision optical pattern requiring sharp angles and flatness of faces in certain detail, on one surface of a continuous resinous sheeting material, the method being performed with the aid of a generally cylindrical endless metal embossing element having an inner surface and an outer surface the outer surface having a precision optical embossing pattern which is the reverse of the precision optical pattern to be formed on one surface of said sheeting, the method comprising the steps of:

(a) continuously moving the endless embossing element along a closed course through a heating station, where said embossing element is heated through its inner surface to a predetermined temperature and then to a cooling station where said embossing element is cooled below said predetermined temperature;

(b) continuously feeding onto said embossing element as it passes through a part of said heating station superimposed resinous film and sheeting materials, said resinous materials of said film and said sheeting each having different glass transition temperatures, said sheeting being in direct contact with lhe outer precision patterned surface of said embossing tool;

(c) continuously heating said embossing element to said predetermined temperature at said heating station, said temperature being greater than the glass transition temperature of said sheeting and less than the glass transition temperature of said resinous film;

(d) pressing said superimposed film and sheeting against said embossing element at a plurality of pressure points sequentially spaced along said heating station with one surface of said sheeting confronting and engaging said precision optical pattern on said embossing element until said one surface of said sheeting conforms to said precision optical embossing pattern;

(e) continuously passing said embossing element and said superimposed film and sheeting through said cooling station where the temperature of said embossing element and said sheeting is lowered below said sheeting glass transition temperature, with said film serving to substantially continuously maintain said sheeting in engagement with said embossing element through the heating station and through said cooling station; and

(f) continuously stripping said superimposed layer of film and embossed sheeting from said embossing element, said film being later strippable from the other face of said sheeting without destroying said optical pattern formed on said one face of said sheeting.

10. Apparatus for continuously embossing a precision optical pattern on one surface of transparent resinous material, said apparatus comprising embossing means including a continous seamless embossing tool in the form of a thin metal element having an inner surface and an outer surface, its outer surface having a precision optical embossing pattern thereon which is the reverse of the precision optica pattern to be formed in the resinous material.

4,486,364

METHOD AND APPARATUS FOR MOLDING A SYNTHETIC RESIN LENS FOR A LIGHT EMITTING DIODE

Kaoru Takahashi, Zama, Japan, assignor to Stanley Electric Company, Ltd., Tokyo, Japan

Filed Jun. 29, 1982, Ser. No. 393,466

Claims priority, application Japan, Dec. 4, 1981, 56-195265

Int. Cl.³ B29D *11/00*

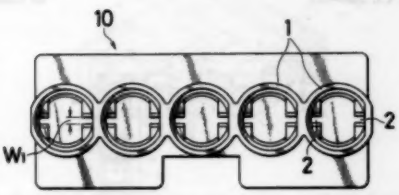
U.S. Cl. 264—1.7 **5 Claims**

1. A method for molding a synthetic resin lens for a light emitting diode, the method comprising the steps of:

providing a mold with a mold cavity having a bottom wall and a plurality of side walls defining a lens for the light emitting diode; forming a pair of grooves in the mold which are arranged on opposite sides of and communicate with the mold cavity, fitting the first ends of a pair of lead frames having a light emitting element mounted at a fixed

position on one of said lead frames into said mold, so that a first portion of the first ends of each lead frame inserted into said mold extends into and is closely fitted within an associated one of said grooves, and so that the remaining portion of the first ends of each lead frame extends into said mold cavity, the first ends of said lead frames being inserted into the mold, so that the free ends thereof engage a bottom wall of the mold, and filling said mold with synthetic resin, the tight fit between said first portions of said lead frame and said grooves preventing the synthetic resin from entering into said grooves to completely expose the surfaces of the first portions when the molded product is removed from the mold.

2. Apparatus for molding a synthetic resin lens for a light emitting diode structure comprised of a pair of conductive lead frames joined by removable reinforcing means to maintain the lead frames in a predetermined spaced-apart arrangement; the free ends of said conductive lead frames having free end edges lying in a common imaginary plane and having opposing sides projecting away from one another; a mounting surface on one side of said lead frames extending toward the other lead frame and arranged a predetermined distance from the free end edge thereof; a light emitting element mounted upon said mounting surface to provide an electrical connection therebetween;



means for electrically connecting said light emitting element to the remaining one of said lead frames;

a mold having a mold cavity with a shape conforming to the lens to be molded and a pair of aligned recesses communicating with and on opposite sides of the cavity of said mold forming said lens, each receiving one of said opposing sides of said conductive lead frames;

said lead frames having at least the inner portions thereof arranged within said mold cavity;

at least a portion of the base of said mold cavity being arranged to engage said free edges and being flat to be engaged by both of said free edges to thereby precisely locate the light emitting element relative to the base of said mold cavity to assure precise positioning of the light emitting element relative to the surface of the lens formed by the base of said mold;

the grooves each forming a tight fit with the opposing surfaces of an associated lead frame to prevent the synthetic resin, used to fill the mold and form the lens, from entering said grooves, whereby the surfaces of said opposing sides are exposed and not covered by the synthetic resin when the molded lens is removed from the mold after being formed to provide for radiation of heat generated by said diode structure through the outer portions of said conductive lead frames.

4,486,365

PROCESS AND APPARATUS FOR THE PREPARATION OF ELECTRET FILAMENTS, TEXTILE FIBERS AND SIMILAR ARTICLES

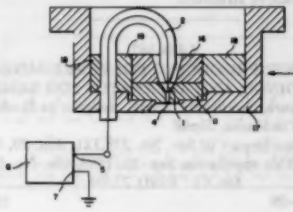
Bruno Kliemann, Freiburg, and Martin Stoll, Freiburg-Hochdorf, both of Fed. Rep. of Germany, assignors to Rhodia AG, Freiburg, Fed. Rep. of Germany

Filed Sep. 17, 1982, Ser. No. 419,619

Claims priority, application European Pat. Off., Mar. 29, 1982, 82102620.0

Int. Cl.³ B29C *9/00*

U.S. Cl. 264—24 **10 Claims**



1. A method for the production of electret filaments, fibers or the like from a thread-forming, high molecular weight substance, which consists of melting said thread-forming, high molecular weight substance, and extruding said substance in the molten state through a die orifice, electrically charging, with either a negative or a positive sign, and electrically polarizing said substance for the production of a stable electric field originating from the formed filaments, fibers or the like, cooling the formed filaments, fibers or the like, and the step of electrically charging, with either a negative or a positive sign, and the electric polarization for the production of a stable electric field originating from the formed filaments, fibers or the like is effected immediately prior to or during the issuance of said thread-forming, high molecular weight substance from the die orifice on said substance, while it is in the molten state.

4,486,366

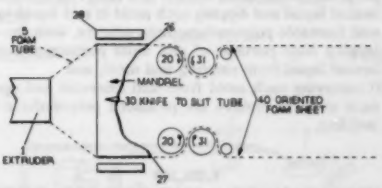
METHOD OF CONTINUOUSLY PRODUCING HEAT SHRINKABLE AMORPHOUS POLYSTYRENE FOAM LAYER

Subba K. Reddy, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 14, 1983, Ser. No. 458,000

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—25 **13 Claims**



1. A method of continuously producing a highly oriented polystyrene foam sheet which shrinks at substantially lower temperatures to form a label or a cup, the foam sheet being dimensionally stable during shipping and handling and have excellent surface appearance for printing and decoration, the method comprising the steps of:

A. extruding an amorphous polystyrene foam sheet as a

single layer with little or no orientation during the extrusion;

B. heating the foam sheet by contacting hot rolls or by exposing to infrared heaters to the orientation temperature;

C. stretching the sheet in a longitudinal direction between a pair of spaced rolls running at different speeds to reduce its thickness, and provide a dimensionally stable, highly oriented structure;

D. printing on the oriented sheet to decorate the same to thereby provide a dimensionally stable, decorated sheet; and

E. heat shrinking the decorated, oriented sheet to form a final attractive structure.

4,486,367

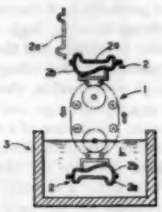
PROCESS FOR PRODUCING POLYURETHANE-FOAM MOLDINGS, AND APPARATUS FOR SAME

Kenji Shimomura, Yokohama, Japan, assignor to Ikeda Bussan Co., Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 278,121, Jun. 29, 1981, abandoned. This application Sep. 22, 1983, Ser. No. 534,908

Int. Cl.³ B29D 27/04

U.S. Cl. 264—39 **10 Claims**



1. A process for producing polyurethane foam moldings, comprising

(A) arranging two portions of a mold together, said mold portions adapted to be opened and closed with respect to one another, said mold portions having obliquely extending edges which overlap one another when said mold is closed, the edge of one portion extending around said other portion, and the outer ends of both said portions extending substantially horizontally, forming a clearance between said two portions when closed,

(B) arranging a plurality of said molds on a conveyor,

(C) pre-treating said molds with a mold release agent

(D) injecting a foamable polyurethane resin mixture into each mold,

(E) closing each mold,

(F) conveying each mold with the foamable polyurethane resin mixture injected therein to a reservoir containing a heated liquid and dipping each mold in said liquid to cure said foamable polyurethane resin mixture, with the overlapping edge portions of said mold portions preventing heated liquid from entering said mold, and

(G) removing each mold from said reservoir and opening each mold to remove the produced polyurethane foam molding.

4,486,368

METHOD OF MAKING A COMPOSITE FOAMED RESIN SKI

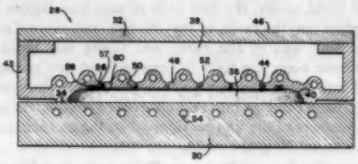
Kendal Hancock, Wichita Falls, Tex., assignor to Texas Recreation Corporation, Wichita Falls, Tex.

Filed Sep. 30, 1982, Ser. No. 431,485

Int. Cl.³ B29D 27/00

U.S. Cl. 264—46.7 **35 Claims**

1. A process for making an article having a foam body and a surface plate comprising steps of positioning a plate within a mold cavity, holding the plate against a surface of the mold cavity with vacuum pressure, injecting foam material into the mold cavity without initially contacting the surface plate, expanding the foam to fill the mold cavity and to bring the



foam into contact with the plate, extreme internal pressure generated by said expanding foam further urging the plate against said surface to prevent leakage of foam material to an upper surface of the surface plate, and hardening the foam to form a foam body having said plate affixed thereto.

4,486,369

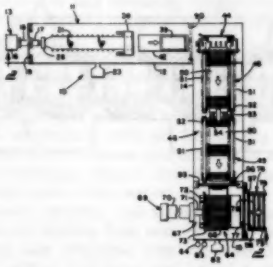
CONTROLLED ENVIRONMENT EXTRUSION APPARATUS AND METHOD

R. S. Schafler, and Norman I. Schafler, both of New York, N.Y., assignors to Condec Corporation, Old Greenwich, Conn.

Filed Nov. 9, 1983, Ser. No. 550,124

Int. Cl.³ B29D 27/00

U.S. Cl. 264—51 **48 Claims**



1. A method for producing foamed bodies comprising the steps of continuously extruding foamable material into a first zone at reduced pressure to form a continuous length of foamed extrudate, cutting the foamed extrudate within the first zone to obtain foamed pieces of predetermined length, characterized by cyclically alternating a second zone between such reduced pressure and external pressure without affecting the reduced pressure in the first zone, passing a plurality of the foamed pieces to the second zone when in the reduced pressure portion of each cycle, and discharging such plurality from the second zone when in the atmospheric pressure portion of the cycle.

4,486,370

PAINT ADHESION FOR RIM PARTS

Ibrahim S. Bechara, Boothwyn, and Rocco L. Mascioli, Media, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 358,402, Mar. 15, 1982, Pat. No. 4,400,476. This application Jun. 8, 1983, Ser. No. 502,069

Int. Cl.³ B29D 27/00

U.S. Cl. 264—53 **8 Claims**

1. A method for producing a resin-base coated RIM elastomeric polyurethane product which comprises

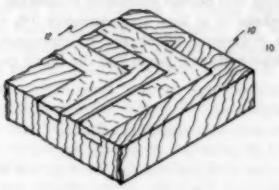
(a) injecting into a mold cavity a reactive mixture comprising per hundred parts of a polyether polyol in the mixture
(i) 10 to 50 parts of a chain extender which is a low molecular weight diol,
(ii) 50 to 300 parts polyisocyanate,
(iii) 0 to 4 parts volatile fluorocarbon blowing agent,
(iv) a catalyst component comprising 0.1 to 1 parts non-reactive tertiary amine and 0 to 0.2 parts organotin catalyst, and
(v) a reactive organic halogen compound in an amount providing the equivalent of about 1 to 1.5 molar parts of reactive halogen per mole of available amino nitrogen in the catalyst component,
(b) removing the obtained elastomeric polyurethane product from the mold, and
(c) applying to the molded product an acid-catalyzed resin-based coating.

4,486,371

PRODUCTION OF A DECORATIVE WOOD PANEL WITH SIMULATED WOOD INLAY

John S. Caliri, P.O. Box 2083, Sumter, S.C. 29150

Filed Sep. 9, 1982, Ser. No. 416,123
Int. Cl.³ B29C *17/12*
U.S. Cl. 264—78 **11 Claims**



1. A method of producing a decorative wood panel with a simulated wood inlay comprising the steps of:
(a) providing a wood panel having depressions in the surface thereof;
(b) overfilling the depressions with an inlay material having a shrinkage factor less than the amount of overfill and a hardness when fully cured greater than that of the wood;
(c) curing the material until it has the approximate hardness of the wood;
(d) abrading the surface of the panel to create the appearance of a wood grain in the inlay material by creating scratches therein and to remove any excess inlay material from the surface of the panel thereby providing a generally planar panel surface.
(e) curing the inlay material to a hardness greater than that of the wood; and
(f) abrading the surface of the panel to remove the scratches in the wood created during the prior abrading step while leaving the scratches in the inlay material so that the inlay material retains the apearance of a wood grain.

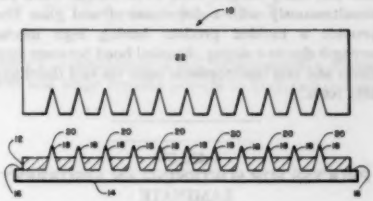
4,486,372

METHOD FOR FABRICATING CONTOURED PERFORATED COMPOSITE LAMINATE STRUCTURE

Ernest C. Millard, and William D. Brown, both of Riverside County, Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Sep. 30, 1983, Ser. No. 537,790
Int. Cl.³ B29G *5/00*
U.S. Cl. 264—137 **3 Claims**

1. In a method of manufacturing a contoured perforated composite laminate, comprising the steps of:
providing a mold with a flat surface portion including a plurality of spaced apart rigid pins integral therewith projecting substantially perpendicular from the mold surface portion;
coating the mold surface portion and pins with a mold release agent which will not substantially effect the material of a subsequently placed sheet thereon;
impregnating a composite laminate structure with an epoxy resin which is allowed to dry;
warming said composite laminate structure impregnated with the dried epoxy resin material;
placing over the pins said warmed composite laminate structure;



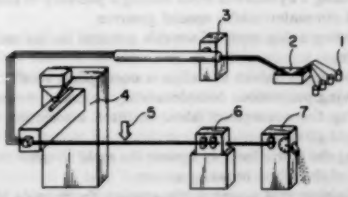
forcing the composite laminate structure against the mold surface portion by means of a pressure pad causing the pins to pass project through the composite laminate structure;
partially curing the uncured composite laminate structure while held under pressure against the mold surface by the pad;
removing the partially cured composite laminate structure from the flat mold surface;
placing the partially cured composite laminate structure on a curing fixture having a desired contour; and
completing the cure of said partially cured composite laminate structure.

4,486,373

METHOD FOR PRODUCING REINFORCED THERMOPLASTIC RESIN COMPOSITION

Toshio Kurauchi, Nagoya; Hidero Takahashi, Aichi; Shigeyuki Sato, Toyota; Makoto Murase; Minoru Takahara, both of Nagoya; Tamio Ohi, Okazaki, and Takaki Kamio, Toyota, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi; Aisin Seiki Kabushiki Kaisha and Aisin Kako Kabushiki Kaisha, both of Kariya, all of, Japan

Division of Ser. No. 320,526, Nov. 12, 1981, abandoned. This application May 3, 1983, Ser. No. 488,529
Claims priority, application Japan, Nov. 18, 1980, 55-162326; Nov. 26, 1980, 55-166128; Nov. 26, 1980, 55-166129; May 29, 1981, 56-83348; Jun. 10, 1981, 56-89224; Jul. 15, 1981, 56-110288
Int. Cl.³ B02C *41/44*
U.S. Cl. 264—142 **8 Claims**



1. A method for producing a fiber reinforced thermoplastic resin composite material for molding, which comprises the steps of:

applying an uncured, thermally curable resin continuously to the surfaces of reinforcing glass fibers in the form of rovings;

successively introducing said rovings through a strand guide into a thermoplastic resin in an extrusion molding machine to extrusion mold a resin strand comprising said thermoplastic resin in which said rovings are axially buried;

immediately cooling said resin strand for minimizing reaction of said uncured, thermally curable resin; and

cutting said resin strand into pellets, thereby allowing said thermally curable resin to remain uncured, and allowing said thermally curable resin to be cured, when molded, simultaneously with a dispersion of said glass fibers to provide a molded product having high mechanical strength due to a strong chemical bond between said glass fibers and said thermoplastic resin via said thermally curable resin.

4,486,374

PROCESS FOR SOFTENING AN ABSORBENT LAMINATE

Paul H. Stelzer, Granville, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 15, 1982, Ser. No. 434,686

Int. Cl.³ B29D *7/20;* **B29C** *25/00*

U.S. Cl. 264—156 **17 Claims**

1. A process for softening a dry film of a swellable hydrophilic polymer by applying a liquid aliphatic hydroxyl compound having a boiling point of at least 100° C. to the surface of said film in an amount of 10 to 50 percent based on the weight of said film.

4,486,375

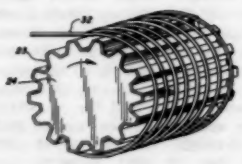
METHOD OF MANUFACTURING TOOTHED BELTS

Hideo Hirai, Kakogawa, Japan, assignor to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Feb. 23, 1983, Ser. No. 469,024

Int. Cl.³ B29D *3/02, 31/00*

U.S. Cl. 264—254 **20 Claims**



1. The method of manufacturing a toothed belt sleeve comprising the steps of:

providing a cylindrical mold having a plurality of longitudinal circumferentially spaced grooves;

providing a thin layer of settable material on the mold surface;

preforming a fabric to define a corrugated reinforcement having projections complementary to said grooves;

placing the corrugated fabric in fitted association in said mold grooves;

urging the fabric forcibly against the mold to cause accurate fit of the fabric in said grooves;

maintaining said urging while causing the settable material to at least partially set on the fabric corrugations;

wrapping a tensile cord about the fabric-covered mold; and

forming a belt body about the tensile cord and in the corrugations on the fabric.

4,486,376

PROCESS FOR MODIFYING POROUS POLYMERIC MEMBRANE

Hiroshi Makino; Yoshihiro Kusuki; Takashi Harada; Hiroshi Shimazaki, and Tosio Isida, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Yamaguichi, Japan

Filed Jun. 25, 1982, Ser. No. 392,169

Claims priority, application Japan, Jul. 1, 1981, 56-101335; Jul. 10, 1981, 56-107137

Int. Cl.³ B29C *25/00*

U.S. Cl. 264—342 R **23 Claims**

1. A process for modifying a porous membrane, comprising:

impregnating at least one surface portion of a porous polymeric membrane with a volatile treating liquid containing a modifying agent; and

gradually evaporating said treating liquid from said porous polymeric membrane,

said modifying agent being imparted in an amount of 0.1% to 50%, based on the weight of said porous polymeric membrane, thereto and consisting essentially of at least one member selected from the group consisting of:

(A) volatile, dissolving organic liquids each capable of dissolving therein at least approximately 1% by weight of the polymeric material of which said porous polymeric membrane consists at a temperature of 25° C.; and

(B) volatile shrinking organic liquids each capable of causing said porous polymeric membrane to shrink at a shrinkage of at least approximately 3% when said porous polymeric membrane is impregnated with said shrinking organic liquid and the liquid evaporated.

4,486,377

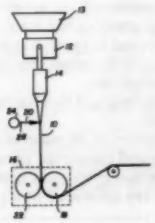
PROCESS FOR REDUCING DRAW RESONANCE IN POLYMERIC FILM

Peter J. Lucchesi, Middlesex; Stuart J. Kurtz, Martinsville, and Ernest H. Roberts, Somerset, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 27, 1982, Ser. No. 424,642

Int. Cl.³ D01D *5/12*

U.S. Cl. 264—510 **34 Claims**



1. A process for reducing draw resonance of a polyolefin molten film susceptible to draw resonance under conditions which would cause draw resonance by extruding the molten film from a die and rapidly cooling said molten film in a rapid cooling zone containing a pressure roll and chilling roll, which comprises contacting said molten film transversely across the surface of said molten film with a gas selected from nitrogen, carbon dioxide, or air at a site substantially midway between said die and the nip of said pressure roll and chilling roll said gas being directed against said molten film at a velocity of about 1 to 150 feet per minute and in an amount sufficient to reduce draw resonance in said molten film. pg.39

4,486,378

PLASTIC BOTTLES AND PROCESS FOR PREPARATION THEREOF

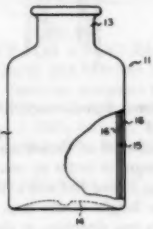
Sadao Hirata, Yokohama; Isao Tanikawa, Ayase, and Yoshitsugu Maruhashi, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha Ltd., Tokyo, Japan

Continuation of Ser. No. 386,039, Jun. 7, 1982, abandoned, which is a division of Ser. No. 258,772, Apr. 29, 1981, Pat. No. 4,370,368. This application Apr. 12, 1984, Ser. No. 598,543

Claims priority, application Japan, May 7, 1980, 55-59505; May 7, 1980, 55-59506

Int. Cl.³ B29D 9/04

U.S. Cl. 264—512 **9 Claims**



1. A process for the preparation of coated plastic bottles which excel in both oxygen-barrier property and water resistance, which comprises coating at least one surface of a plastic bottle-forming parison, preform or sheet formed of a thermoplastic resin by melt molding with an aqueous latex of a copolymer consisting essentially of 99 to 70% by weight of vinylidene chloride and 1 to 30% by weight of at least one acrylic or methacrylic monomer and further including up to 100 parts by weight of at least one member selected from other ethylenically unsaturated monomers per 100 parts by weight of the total amount of said two monomers, said copolymer having an oxygen permeability constant of less than 9×10^{-14} cc-cm/cm^2-sec-cmHg as measured at a temperature of 20° C. and a relative humidity of 100% and a water vapor permeability constant of less than 3×10^{13} g-cm/m^2-day as determined according to the method of JIS Z-0208, drying the coated parison, preform or sheet to form a coating layer, subjecting the so-formed coated structure to biaxially drawing blow molding or deep forming to introduce monoaxial or biaxial orientation in said plastic substrate, and then increasing the oxygen-barrier property and water resistance of the coated plastic bottle by subjecting the resultant bottle to aging at a temperature of 30° to 120° C. for 30 seconds to 7 days.

4,486,379

PROCESS FOR FORMING AN INTEGRAL HINGED SINGLE WALL BLOW MOLDED CONTAINER

Robert R. Wilkie, Roanoke Rapids, N.C., and Charles S. Cooke, Mauldin, S.C., assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Division of Ser. No. 133,778, Mar. 26, 1980, abandoned. This application Jun. 17, 1982, Ser. No. 505,153

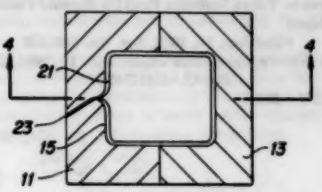
Int. Cl.³ B29C 17/07, 17/14

U.S. Cl. 264—526 **4 Claims**

1. A blow molding process for forming a parison into an integral single-walled container comprising top and bottom portions connected together by an integral hinge portion, said process comprising the steps of:

inflating said parison within a hollow mold to conform the parison to the configuration of the interior surface of said mold, said interior surface comprising a hinge forming area adapted to create a draw ratio of greater than 1, whereby hinge forming portion of said parison is simultaneously deep drawn to a draw ratio of greater than 1, thinned and oriented;

removing the thus inflated parison from the mold; and



severing a circumference of said parison which is contiguous with said hinge forming portion to form said container.

4,486,380

METHOD OF SHUTTING DOWN A HIGH-TEMPERATURE REACTOR

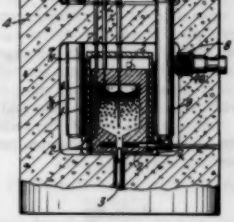
Fritz Schweiger, Denzlingen, and Jürgen Wohler, Hamm, both of Fed. Rep. of Germany, assignors to Hochtemperatur-Kernkraftwerk Gesellschaft mit beschränkter Haftung (HKG) Gemeinsame Europäisches Unternehmen, Hamm, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 79,068, Sep. 26, 1979, abandoned, which is a continuation of Ser. No. 928,434, Jul. 27, 1978, abandoned, which is a continuation of Ser. No. 801,338, May 27, 1977, abandoned, which is a continuation of Ser. No. 705,167, Jul. 14, 1976, abandoned, which is a continuation of Ser. No. 603,925, Aug. 12, 1975, abandoned, which is a continuation of Ser. No. 504,882, Sep. 11, 1974, abandoned, which is a continuation of Ser. No. 347,815, Apr. 4, 1973, abandoned. This application Jul. 23, 1981, Ser. No. 286,160

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1972, 2217816

Int. Cl.³ G21C 7/32

U.S. Cl. 376—210 **15 Claims**



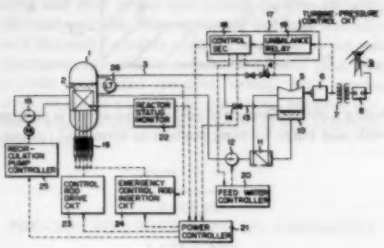
1. A method of shutting down a high temperature pebble-bed nuclear reactor having a negative temperature coefficient of reactivity while it is operating in the critical stage with the reactor core having a predetermined critical average core temperature and the heat generated by the core in the critical state being removed by circulating a coolant fluid through the core, including the steps consisting essentially of at least reducing the removal of heat from the reactor core by the coolant fluid, and increasing the average core temperature by an increment above the critical average core temperature for rendering the core hot sub-critical due to the negative temperature coefficient of the reactivity.

4,486,381

POWER CONTROLLING APPARATUS FOR BOILING WATER ATOMIC REACTOR

Hirukawa Koji, and Susumu Sumida, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 14, 1982, Ser. No. 368,436
Claims priority, application Japan, Apr. 17, 1981, 56-57908
Int. Cl.³ G21C 7/32
U.S. Cl. 376—210 **5 Claims**



1. A power control apparatus for a boiling water atomic reactor which is provided for a nuclear power plant having a boiling-water reactor with a core, a pressure vessel; an electric generator; a turbine driven by steam produced in the pressure vessel to cause the electric generator to be driven; a condenser to which the steam which has driven said turbine is conducted; a load rejection detector connected to said electric generator; and a bypass valve responsive to said load rejection detector to bypass the steam from said pressure vessel to the condenser when a load rejection occurs, in which at a time of load rejection the boiling water reactor is operated at a lower power level, said power control appartus comprising:

pump means for recirculating a coolant in said pressure vessel;

control rod inserting means for inserting control rods into the core;

reactor status monitoring means for detecting a power output level and a coolant flow rate in the core; and

control means responsive to said load rejection detector to generate a signal based on a power output level P_0 and core flow rate W_0 in the core at the time of load rejection, said signal being used for controlling whether or not the control rod should be inserted into the core, in which when said signal is greater than a predetermined value said control means permits selected control rods to be inserted into the core through said control rod inserting means and at the same time said control means permits the recirculating pump means to be operated in a minimum coolant flow rate and when said signal is less than said predetermined value said control means permits the recirculating pump means to be operated in said minimum coolant flow rate without inserting any control rods.

4,486,382

METHOD AND APPARATUS FOR MONITORING THE CONTROL RODS OF A NUCLEAR REACTOR

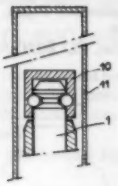
Alain Gravelle, Le Plessis Robinson; Jean Marini, Marly Le Roi, and Dominique Romy, Paris, all of France, assignors to Framatome, Courbevoie, France

Filed Jan. 28, 1982, Ser. No. 344,232
Claims priority, application France, Feb. 4, 1981, 81 02096
Int. Cl.³ G21C 7/36
U.S. Cl. 376—216 **7 Claims**

1. Method of continuously monitoring the displacement of the control rods of a pressurized water nuclear reactor in which each control rod is suspended from a suspension rod cooperating with a control mechanism for successive stepwise upward or downward displacements of said rod over a fixed distance corresponding to a displacement step, each step-by-step displacement being followed by a period of support on maintenance pawls, said method comprising the steps of

(a) measuring constantly and at regular intervals the speed of displacement of said rod, positively in the upward direction and negatively in the downward direction;

(b) detecting spaced variations in said speed corresponding to a period of support following a displacement step, by



applying to them a sign corresponding to the direction of movement; and

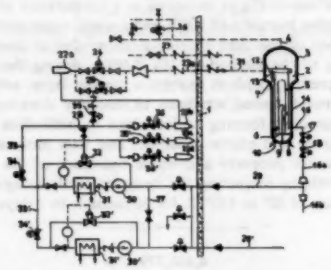
(c) totaling the number of variations detected, taking into account their sign, in order to count the number of displacement steps of said rod and to deduce therefrom, as a function of the height of the step, the amplitude of the displacement in one direction or the other.

4,486,383

METHOD AND APPARATUS FOR COOLING THE PRIMARY CIRCUIT OF A PRESSURIZED WATER NUCLEAR REACTOR

Mariana Esayan, Courbevoie; Gérard Celerier, Clamart, and Nicolas M. Bonhomme, Pontoise, all of France, assignors to Framatome, Courbevoie, France

Filed Nov. 20, 1981, Ser. No. 323,636
Claims priority, application France, Dec. 31, 1980, 80 27859
Int. Cl.³ G21C 19/30
U.S. Cl. 376—299 **6 Claims**



1. Cooling device for effecting and maintaining cold shutdown of a pressurized water nuclear reactor comprising, inside a containment enclosure, a vessel containing the core of said reactor, a primary circuit with at least two loops in communication with said vessel, in which pressurized water or primary water circulates for contacting said core so as to remove heat released therefrom, and at least two steam generators of the pre-heater type, each disposed in one of said loops and each comprising a casing and a bundle of U-shaped tubes the branches of which are separated by a separating plate disposed within said casing, the primary water circulating in said tubes of said bundle while the feed water is introduced by a feed circuit in said casing and placed in contact with the external surface of said tubes at the outlet end of the primary water and drawn in the form of steam by an outlet at the upper part of said casing, said cooling device comprising

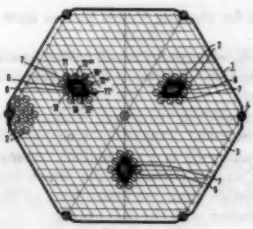
(a) a pipe for removing the feed water in each said steam generator, said pipe opening inside said casing adjacent said bundle at the inlet end of the primary water in said tubes;
(b) at least one heat exchanger disposed outside said containment enclosure in a cooling circuit in communication with said pipe and with said feed water circuit;
(c) at least one valve in said pipe, the opening of said valve, at the end of a first stage of cold shutdown of said reactor during which the feed water is vaporized and the steam is discharged permitting the feed water to be cooled by circulation in said cooling circuit and then recycled in said steam generator by said feed water circuit.

4,486,384

FUEL ASSEMBLY FOR A NUCLEAR REACTOR

Peter Rau, Mittelehrenbach, and Manfred Schatz, Nuremberg, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Mar. 3, 1981, Ser. No. 240,253
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1980, 3008442
Int. Cl.³ G21C *1/04*
U.S. Cl. 376—353 **4 Claims**



1. Fuel assembly for a nuclear reactor having a bundle of fuel rods of circular cross section extending parallel to one another and disposed at positions forming a raster, comprising an outer guide tube for receiving therein a control rod extending parallel to the fuel rods in the bundle and occupying the positions for and having a cross section completely covering the combined cross section of a plurality of mutually adjacent fuel rods in the raster, the cross section of said guide tube being defined by a plurality of circular arcs conforming with those of the circular cross section of the adjacent fuel rods covered thereby and being connected by a plurality of concave arcuate sections.

4,486,385

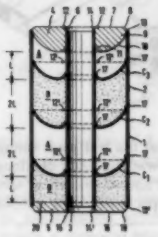
TUBULAR COMPOSITE ELEMENTS PROCESSES AND A PRESSING FOR THEIR PRODUCTION

Christer Aslund, Torshälla, Sweden, assignor to NYBY Uddeholm AB, Torshalla, Sweden

Filed Mar. 16, 1981, Ser. No. 243,771
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009916
Int. Cl.³ B22F *5/00, 3/00*
U.S. Cl. 419—48 **55 Claims**

1. A process for the simultaneous production of a plurality of tubular composite elements of metal having opposite ends of different materials, comprising the steps of:
(A) axially alternately and separately introducing at least two powders, each consisting of one of the different materials into a metallic hollow cylindrical casing in at least three sections of predetermined axial length;
(B) condensing sections of the powders by vibration, including ultrasound, to around 60–70% of the theoretical density;
(C) closing the casing;
(D) cold isostatically pressing the closed casing under a pressure of at least about 3,000 bars to at least 80% of the theoretical density for a pressing;
(E) heating and subsequently hot-extruding the pressing to form a tube; and
(F) dividing the tube into two or more composite elements having a different material at opposite ends thereof.

39. A pressing for simultaneously producing a plurality of tubular composite elements of metal having opposite ends of different materials by hot-extrusion, comprising:



(A) a metallic hollow cylindrical casing having a closure plug at fron and rear ends thereof; and
(B) at least three axially alternate and separate sections of powders located within said casing, each consisting of one of the different materials and being of a predetermined axial length, said powders having been condensed within the casing to 60–70% of the theoretical density by vibration, including ultrasound, and subsequently increased to 80% of theoretical density by cold isostatic pressing.

4,486,386

REACTIVE METAL-PALLADIUM-GOLD BRAZING ALLOYS

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 422,625, Sep. 24, 1982, Pat. No. 4,448,605. This application Mar. 14, 1983, Ser. No. 475,264
Int. Cl.³ C22C *5/02*
U.S. Cl. 420—508 **8 Claims**

1. An article consisting essentially of a ductile brazing alloy foil having a composition consisting essentially of from about 0.05% to about 4% by weight of a reactive metal selected from the group consisting of titanium, vanadium, zirconium and mixtures thereof, from about 5% by weight to about 45% by weight of palladium and from about 55% by weight to about 94.9% by weight of gold thereof.

4,486,387

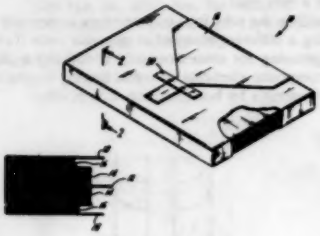
DISPOSABLE PREVACUUM STEAM STERILIZER TEST DEVICE

Thomas A. Augurt, Stamford, Conn., assignor to Propper Manufacturing Co., Inc., Long Island City, N.Y.

Filed Jun. 16, 1982, Ser. No. 388,744
Int. Cl.³ G01N *21/78*
U.S. Cl. 422—58 **5 Claims**

1. A disposable test pack for evaluation of prevacuum steam autoclaves comprising a sterilization test sheet having defined areas adapted to change color in response to the presence of steam under preselected sterilization conditions, variations in degree of said color change indicating variations in sterilization parameters, a first set of disposable nonwoven porous sheets arranged in overlaying relation positioned above and immediately adjacent the upper face of said sterilization test sheet, a second set of disposable nonwoven porous sheets arranged in overlaying relation and positioned below and immediately adjacent the lower face of said sterilization test

sheet, the inner most sheets of said first and second sets forming an inner core region of said test pack adjacent said sterilization test sheet, said inner core region having a selected height and a porosity which is different from the porosity of the remainder



of the test pack so that the test pack simulates the air entrapping qualities of a Bowie and Dick challenge pack, and means for retaining said first and second sheet sets in close proximity above and below, respectively, said test sheet.

4,486,388

APPARATUS FOR NEUTRALIZING ACIDIC OR ACID-CONTAINING POLLUTANTS IN FURNACE FLUE GASES

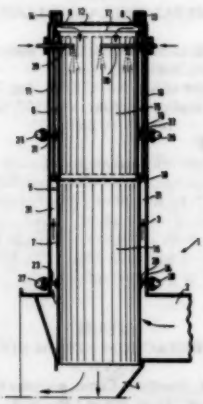
Chrysanth Marnet, and Borchert Kassebohm, both of Düsseldorf, Fed. Rep. of Germany, assignors to Stadtwerke Dusseldorf AG

Filed Oct. 7, 1982, Ser. No. 433,288

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1981, 3140515

Int. Cl.³ F01N *3/15*; B01D *47/06*

U.S. Cl. 422—178 **15 Claims**



1. In an apparatus for neutralizing acidic or acid-containing pollutants in furnace flue gases, said apparatus having a flue gas duct portion defining a contact zone, and atomizers mounted in said flue gas duct portion and projecting into said contact zone for introducing a neutralizing agent in extremely finely divided form into said flue gases, the improvement which comprises an inner pipe suspended within and coaxially with said flue gas duct portion to form a space between the duct portion and pipe, said apparatus having a gas inlet in flow communication with said space, whereby said flue gases are able to flow both inside and outside of said inner pipe, the inner pipe having an outlet for exit gas therefrom, said atomizers projecting into said inner pipe, said inner pipe being composed of a plurality of longitudinal strips which are separate from each other and having an end spaced from the duct portion to provide gas flow communication through the pipe by gas flow around the spaced end, and means connected to said longitudinal strips for vibrating them.

4,486,389

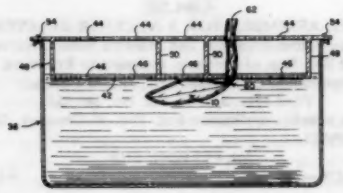
FROZEN PLASMA THAWING SYSTEM

John W. Darnell, Waltham, Mass., and Roman Kuzyk, Hamilton Square, N.J., assignors to Cryosan, Inc., Newton, Mass.

Filed Jun. 28, 1982, Ser. No. 392,641

Int. Cl.³ F28F *7/00*

U.S. Cl. 422—307 **9 Claims**



1. A system for thawing frozen plasma units comprising a water bath;

a thin, flexible, waterproof pouch having a portion vented to the atmosphere, the pouch being receptive to a frozen plasma unit;

means for supporting the pouch within the water bath so that the lower end of the pouch when containing a plasma unit, is maintained in a substantially submerged position while the vented portion of the pouch is maintained in spaced relation from the water level of the bath and in communication with the atmosphere;

said pouch being sufficiently flexible as to be capable of conforming into intimate contact with a plasma unit contained therein under the influence of the pressure of the water in which the pouch is submerged,

whereby a frozen plasma unit may be thawed rapidly and uniformly while maintained in a dry condition.

4,486,390

REGENERATION OF POLYTHIONATE POISONED ION EXCHANGE RESINS USED IN URANIUM RECOVERY

Hans-Peter C. Schmiedel, Wedel/Holstein, Fed. Rep. of Germany, assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 4, 1981, Ser. No. 270,303

Int. Cl.³ C01G *43/00*

U.S. Cl. 423—7 **13 Claims**

1. A process for the recovery of uranium from uranium-containing ore which also contains sulfides, comprising:

(a) leaching said ore to form uranyl complexes and polythionates;

(b) passing the leachate through an anion exchange resin to capture said uranyl complexes and said polythionates on said resin;

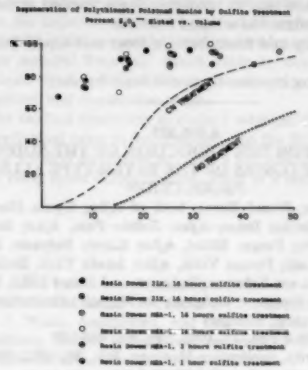
(c) eluting said resin with a solution containing an anion capable of replacing said uranyl complex to recover said uranyl complexes from the resin;

(d) repeating steps (a) to (c) until the resin's loading capacity is substantially reduced to polythionate poisoning;

(e) treating the resin with the eluting solution of step (c) additionally containing a sufficient concentration of sulfite to convert substantially all the polythionates on the resin to thiosulfates, trithionates or lower thionates, or any mixtures thereof; and

(f) treating the resin with the eluting solution of step (c)

wherein said solution contains at least 0.5 M hydrochloric acid to remove from the resin the thiosulfates, trithionates



or lower thionates, or any mixtures thereof formed in step (e).

4,486,391
SEPARATION AND RECOVERY OF IONIC SUBSTANCES BY FLUORINE-CONTAINING COMPOUND

Yutaka Hashimoto, Urawa, Japan, assignor to Dainippon Ink and Chemicals, Inc., Tokyo and Kawamura Institute of Chemical Research, Saitama, both of, Japan

Filed Aug. 18, 1982, Ser. No. 409,305

Claims priority, application Japan, Aug. 25, 1981, 56-132049; Aug. 25, 1981, 56-132050; Aug. 25, 1981, 56-132051; Sep. 17, 1981, 56-145445; Apr. 21, 1982, 57-65498

Int. Cl.³ B01D *11/04*

U.S. Cl. 423—9 **15 Claims**

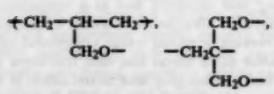
1. A method for recovering a cationic substance selected from the group consisting of metal ions, metal oxide ions, complex ions, amino acids and ammonium compounds, which comprises adding a water-insoluble organic solvent solution of a fluorine-containing compound containing both a fluoroalkyl group and a group having affinity for the cationic substance in its molecular structure and represented by the following general formula (I)

$$(\{Rf\text{-}(A)_a\text{-}Y\}(X)_b)_n(Z)_c \qquad (I)$$

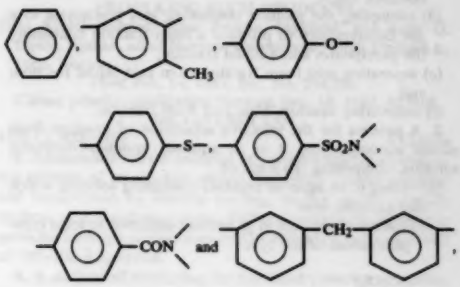
wherein

Rf is a fluoroalkyl group having 3 to 20 carbon atoms, A is a polyvalent linking group having a valence of 2, 3 or 4, selected from the group consisting of an etheric oxygen atom, an etheric sulfur atom, a carbonyl group, a sulfonyl group, a tertiary nitrogen atom, a carbonamido group, a sulfonamide group, $-CH_2-_p$ where p is an integer of 1 to 5,

wherein p is an integer of 1 to 5,



$-CH_2CH_2N<$, $-CH_2CH_2S-$, $-CH_2CH_2SO_2N<$, $-CH_2CH_2CON<$,



Y is a group having a valence of 1, 2 or 3 and alone or together with the group A has affinity for the cationic substance, and the functional group constituting Y is at least one member selected from the group consisting of a sulfonyl group, sulfonamido group, a carbonyl group, carbonamido group, a carbonyl ester group, amino group, hydroxyl group, a urethane linkage, a urea linkage and an ether linkage,

X is an aliphatic or aromatic group having a valence of 1 which bonds to A or Y and which does not hinder the interaction of said compound with the cationic substance,

Z is a polyvalent linking group having a valence of 2 or 3 which links two or three groups ($\{R_f\text{-}(A)_a\text{-}Y\}(X)_b$) by bonding to A or Y in the two or three group ($\{R_f\text{-}(A)_a\text{-}Y\}(X)_b$),

a, b and c are 0 or 1 and are determined independently from each other,

n is an integer of 1 to 3, and when n is 1, c is zero, to a liquid medium in which the cationic substance is dissolved or dispersed, and separating the cationic substance from the liquid medium by including it in an ionophore formed by the fluorine containing compound.

12. The method of claim 1 wherein an uranyl ion is recovered from sea water by adding a fluorine-containing compound within the general formula (I) and which has a high ability to selectively include the uranyl ion to the sea water in which the uranyl ion is dissolved or dispersed, and separating the uranyl ion from the sea water by including it in an ionophore formed by the fluorine-containing compound.

4,486,392
PROCESS FOR THE SELECTIVE SEPARATION OF URANIUM FROM ACCOMPANYING METALS

Klaus Heckmann, and Jiri Spurny, both of Regensburg, Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Aug. 26, 1981, Ser. No. 296,440

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817029; Jan. 23, 1979, 2902516

Int. Cl.³ C01G *43/00*

U.S. Cl. 423—11 **25 Claims**

1. A process for the selective separation of uranium from metals accompanying it in a uranium-containing ore, comprising the steps of:

(a) preparing a uranium- and iron-containing solution by dissolving a uranium- and iron-containing ore in an aqueous medium;

(b) adding to said solution

hydrochloric acid in an amount sufficient to form complex anions of the type

$(UO_2Cl_n)^{2-n}$

wherein

n is 3 or 4,

(c) adding to said solution a cationic surface active agent which forms a relatively insoluble precipitate with said complex anion;

(d) subjecting the solution containing said precipitate to a gas flotation step to produce a foam fraction containing the precipitates and a liquid fraction;

(e) separating said foam fraction from said liquid fraction; and

(f) recovering uranium from said foam fraction.

2. A process for the selective separation of uranium from metals accompanying it in an aqueous uranium-containing solution, comprising the steps of:

(a) adding to an aqueous uranium-containing solution which also contains iron

(i) hydrochloric acid in an amount sufficient to form complex anions of the type

$$(UO_2Cl_n)^{2-n}$$

wherein

n is 3 or 4, or

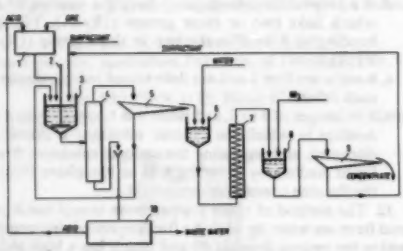
(ii) sulfuric acid in an amount sufficient to form complex anions of the type

$$UO_2(SO_4)_m^{2-2m}$$

wherein

m is 2 or 3;

(b) adding to said solution a cationic surface active agent



which forms a relatively insoluble precipitate with said complex anion, said surface active agent being added in an amount higher than its critical micelle concentration;

(c) subjecting the solution containing said precipitate to a gas flotation step to produce a foam fraction containing the precipitate and a liquid fraction;

(d) separating said foam fraction from said liquid fraction; and recovering uranium from said foam fraction by:

(e) dehydrating the foam containing the precipitate;

(f) suspending the precipitate in a relatively small amount of water;

(g) heating the suspension until a solution is formed;

(h) precipitating the uranium from said solution by means of raising the pH value; and

(i) separating the precipitate from the residual liquid containing the surface active agent.

25. A process for the selective separation of uranium from metals accompanying it in a uranium-containing ore, comprising the steps of:

(a) preparing a uranium- and iron-containing solution by dissolving a uranium- and iron-containing ore in an aqueous medium;

(b) adding to said solution sulfuric acid in an amount sufficient to form complex anions of the type

$$UO_2(SO_4)_m^{2-2m}$$

wherein

m is 2 or 3;

(c) adding to said solution a cationic surface agent comprising cetyl pyridinium chloride;

(d) subjecting the solution containing said precipitate to a gas flotation step to produce a foam fraction containing the precipitate and a liquid fraction;

(e) separating said foam fraction from said liquid fraction; and

(f) recovering uranium from said foam fraction.

4,486,393

PROCESS FOR THE REDUCTION OF THE SODIUM HYDROXIDE LOSSES OF THE BAYER-TYPE ALUMINA PRODUCTION

György Baksa; József Boros, both of Ajka; Gyula Horváth, Budapest; Balázs Ihász, Ajka; Zoltán Pais, Ajka; Mátyás Rainiss, Ajka; Ferenc Sitkei, Ajka; Károly Solymár, Budapest; Béla Tóth; Ferenc Valló, Ajka; István Vörö, Budapest; Mária Orbán nee Kelemen, Budpaest, and József Zöldi, Budapest, all of Hungary, assignors to Magyar Aluminiumipari Tröszt, Budapest, Hungary

Filed Feb. 23, 1983, Ser. No. 469,140

Claims priority, application Hungary, Feb. 26, 1982, 593/82

Int. Cl.³ C01F *1/06*

U.S. Cl. 423—121 **7 Claims**

1. In a Bayer cycle alumina production in which red mud is passed in succession through a series of washers in counterflow to alkali washing liquor, the improvement which comprises reducing sodium hydroxide loss by:

(a) branching red mud slurry consisting of a liquid phase and a solid phase from one of said washers;

(b) adding lime milk to said slurry with the liquid phase having a concentration of substantially 5 to 40 grams of caustic Na_2O/l at a rate of substantially 1 to 2.5 moles of CaO per mole of Al_2O_3 total in said slurry in the first one of a plurality of cascaded heating units and passing the mixture thus formed from unit to unit along the cascade;

(c) stirring the slurry as formed in step (b) in at least one of said units for 0.3 to 5 hours at a temperature of 70° to 110° C. and thereafter passing the mixture to a further one of said units of said cascade;

(d) adding to said slurry 3 to 4 moles of soda per mole of original dissolved Al_2O_3 and continuing the stirring of the resulting composition for 1 to 4 hours at a temperature of 80° to 100° C. in at least one unit of the cascade; and

(e) recycling at least a portion of the slurry resulting from step (d) to the next of said washers in said line.

4,486,394

ALKALI REGENERATION PROCESS

Kien L. Nguyen, Traralgon; Andrew J. Keogh, Balwyn, and Geoffrey H. Covey, Eltham North, all of Australia, assignors to Australian Paper Manufacturers Limited, South Melbourne, Australia

PCT No. PCT/AU83/00035, § 371 Date Nov. 1, 1983, § 102(e) Date Nov. 1, 1983, PCT Pub. No. WO83/03407, PCT Pub. Date Oct. 13, 1983

PCT Filed Mar. 24, 1983, Ser. No. 557,145

Claims priority, application Australia, Mar. 25, 1982, PF3311

Int. Cl.³ C01D *1/04*

U.S. Cl. 423—155 **8 Claims**

1. In the method of recovering an alkali or alkaline earth metal oxide or hydroxide from a solution containing an alkali metal or alkaline earth metal carbonate, organic chemicals and impurities which consists of burning said solution in a fluidized bed of particles of an oxide of a transition metal which is a member selected from the group consisting of Ti, Fe, Co, Ni, and Mn, maintaining said fluidized bed at a temperature at which said alkali metal or alkaline earth metal carbonate becomes molten, recovering a mixed oxide compound of said alkali metal or alkaline earth metal and said transition metal from said fluidized bed, submerging said mixed oxide in water at a temperature above 30° C. to form an alkali metal or alka-

line earth metal oxide or hydroxide and a precipitate of said transition metal oxide and, subsequently separating said precipitate for recycling to said fluidized bed and recovering a solution of said alkali metal or alkaline earth metal oxide or hydroxide, the improvement which consists of agglomerating the fine material in the recycled transition metal oxide precipitate and fine material from said mixed oxide by contacting with spent liquor from a delignification process prior to or during the fluidized bed combustion stage.

5. The method according to claim 1 wherein the fine material is pelletized prior to introduction into the fluidized bed.

8. The method according to claim 5 wherein the pellets are formed using spent delignification liquor as a binder.

4,486,395

CONTINUOUSLY WORKING CRYSTALLIZER

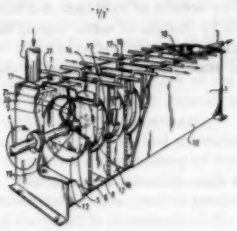
Johan F. Witte, Amsterdam, and Jan W. L. M. Horsmans, Hoofddorp, both of Netherlands, assignors to Goudsche Machinefabriek B.V., Gouda, Netherlands

Continuation of Ser. No. 218,035, Dec. 19, 1980, abandoned. This application May 26, 1982, Ser. No. 382,087

Claims priority, application Netherlands, Dec. 19, 1979, 7909152

Int. Cl.³ B01D 9/02

U.S. Cl. 422—254 **7 Claims**



1. A continuous crystallizer for growing crystals from a low viscosity solution, said apparatus comprising, in combination:

a horizontally elongate vessel having an inlet at one end for a crystallizer solution of low viscosity, an outlet at its other end for depleted crystallizer solution having a homogeneous distribution of crystals therein;

a horizontal shaft extending through said vessel and having a series of circular discs fixed in axially spaced sequence thereto, each disposed in a plane perpendicular to the shaft and cooperating with wall means within the confines of the vessel and which wall means surrounding such discs with small clearance to divide the interior thereof into sequential crystal-growing stages;

means for rotating said shaft;

cooling means at each of said stages for withdrawing heat to promote crystal growth;

said discs having recesses encompassing only minor portions of the circumferences of said discs and constituting substantially the sole passageways from stage-to-stage, said recesses being circumferentially staggered from stage-to-stage, and

scraper means supported by the shaft and positioned and arranged to scrape the cooling means to prevent accretion of crystals thereon while maintaining the homogeneous distribution of growing crystals within the solution for assuring progressive crystal growth from stage-to-stage while maintaining such growing crystals in homogeneously distributed condition within and throughout the solution in each of said stages.

4,486,396

STABILIZED AMMONIUM NITRATE OR STABILIZED PRODUCTS HAVING A HIGH CONTENT OF AMMONIUM NITRATE, AND METHOD OF PRODUCING SUCH PRODUCTS

Olav Kjohl, Heistad; Ellen Brekke, Mykland, and Arne O. Egner, Rjukan, all of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Jun. 14, 1983, Ser. No. 504,286

Claims priority, application Norway, Sep. 14, 1982, 823108

Int. Cl.³ C06B 1/04

U.S. Cl. 423—265 **6 Claims**

1. Ammonium nitrate particles or particles having a substantial content of ammonium nitrate, stabilized against swelling and break-down by thermal cycling, having on the particle surface, as a stabilizing agent, 0.05–1.0 weight % of porous particles having a surface area of 150–400 m^2/g and a pore size of 100–300 Ångströms.

4. A method of producing the stabilized particles according to claim 1, which comprises drying granulated or prilled ammonium nitrate or a product having a substantial content of ammonium nitrate, and coating the dried granules or prills with 0.05–1.0 weight % of the porous particles having a surface area of 150–400 m^2/g and a pore size of 100–300 Ångströms.

4,486,397

GROUP IIIB METALLOPHOSPHATES

Reza Eshraghi, Broadview Heights; Frederick A. Pesa, Aurora, and Mike J. Desmond, Cleveland Heights, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 27, 1983, Ser. No. 565,998

Int. Cl.³ C01B 25/36

U.S. Cl. 423—306 **13 Claims**

1. Crystalline Group IIIB metallophosphates having a composition in terms of mole ratios of oxides in the synthesized state of:

$$X(M'_2O):Y(M_2O_3):Z(P_2O_5):nH_2O \quad (I)$$

wherein

M′ is an alkali metal;

M is a Group IIIB metal;

x/y is a number from about 1.1 to about 1.9;

z/y is a number from about 1 to about 1.9

n/y is a number from about 0 to about 8.

5. A process for preparing a crystalline Group IIIB metallophosphates having a composition in terms of mole ratio of oxides in the synthesized state of:

$$X(M'_2O):Y(M_2O_3):Z(P_2O_5):nH_2O \quad (I)$$

wherein

M′ is an alkali metal;

M is a Group IIIA metal;

x/y is a number from about 1.1 to about 1.9;

z/y is a number from about 1 to about 1.9

n/y is a number from about 0 to about 8,

said process comprising wherein a source of phosphorus is added to a solution containing a Group IIIA metal source, stirring said solution, adding to said solution an alkali cation source to form a reaction mixture, heating said reaction mixture at a temperature of at least 70° C. under autogeneous pressure until crystals are formed, and recovering said crystals from said reaction mixture.

4,486,398

FEEDSTOCK NOZZLE FOR LOW TINT RESIDUAL CARBON BLACK

John R. Casperson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 274,093, Jun. 16, 1981, Pat. No. 4,431,607. This application Jul. 12, 1983, Ser. No. 513,187

Int. Cl.³ C01B *31/02*; C09C *1/48*

U.S. Cl. 423—450 **11 Claims**

1. A method for producing carbon black comprising:

(1) introducing hydrocarbon feedstock into a precombustion zone of a carbon black reactor through a feedstock nozzle positioned in concentric, longitudinal, axial alignment in said precombustion zone said feedstock nozzle comprising;

(a) a first pipe closed at the downstream end and containing a multiplicity of ports spaced longitudinally along said pipe,

(b) a second pipe, jacketing said first pipe, closed at the downstream end and of sufficiently greater diameter than said first pipe to provide an annular space therebetween and having spray ports thereon aligned with said spray ports on said first pipe with

(c) conduits extending radially through said annular space from said first pipe to said second pipe connecting each port on said first pipe with a port on said second pipe and

(d) inlet and outlet means for passing coolant through said annular space around said conduit so that said coolant directly contacts substantially the entire outer surface of each conduit;

(2) contacting said feedstock in said precombustion zone with a rotating mass of combustion gas and subjecting said feedstock and combustion gas to conditions suitable to produce carbon black; and

(3) collecting and removing said carbon black from said reactor.

4,486,399

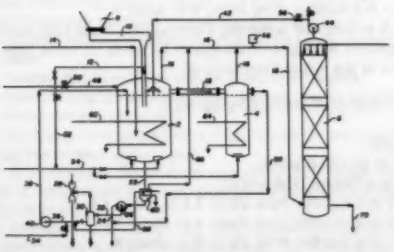
METHOD TO REDUCE THE POTENTIAL SALT CAKE CONTENT OF CHLORINE DIOXIDE GENERATOR SPENT ACIDS

Derek G. Lobley, Surrey, Canada, assignor to Multifibre Process Limited, New Westminster, Canada

Filed Jul. 1, 1983, Ser. No. 510,459

Int. Cl.³ C01B *11/06*

U.S. Cl. 423—478 **13 Claims**



1. In a method of generating chlorine dioxide that comprises forming chloric acid by the action of sulphuric acid on a chlorate in a generator in the liquid phase and reducing the chloric acid to produce chlorine dioxide the improvement that comprises feeding the chlorate to the generator as a solid.

4,486,400

VANADIUM OXIDE SYNTHESIS

Brian Riley, Willimantic, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 25, 1983, Ser. No. 498,140

Int. Cl.³ C01G *31/02*

U.S. Cl. 423—592 **7 Claims**

1. A process for preparing stoichiometric V_6O_{13} which comprises the steps of:

(a) raising the temperature of ammonium metavanadate up to a temperature of from about 350° C. to about 400° C. over an approximately 2 hour time period in a dynamic atmosphere of nitrogen gas to thermally decompose the ammonium metavanadate into a nonstoichiometric V_6O_{13} product while evolving successively ammonia, water vapor and oxygen;

(b) holding the nonstoichiometric V_6O_{13} product at said temperature of from about 350° C. to about 400° C. for about 4 hours in said dynamic atmosphere of nitrogen gas;

(c) heating the nonstoichiometric V_6O_{13} product at a temperature of from about 400° C. to about 500° C. for from about 8 hours to about 12 hours in a dynamic atmosphere of a gaseous mixture having a composition giving an oxygen partial pressure equal to the oxygen partial pressure over stoichiometric V_6O_{13} at said temperature to form stoichiometric V_6O_{13}, said gaseous mixture being composed of from about 2% to about 0.2% by volume of carbon monoxide and from about 98% to about 99.8% by volume of carbon dioxide or composed of from about 10% to about 1% by volume of hydrogen and from about 90% to about 99% by volume of water vapor; and

(d) cooling the stoichiometric V_6O_{13} to room temperature in said dynamic atmosphere of said gaseous mixture.

4,486,401

PRODUCTION OF FINE FERRIMAGNETIC SPINELS

Richard M. Arons, Chatham, and Lawrence D. David, Florham Park, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 14, 1983, Ser. No. 475,003

Int. Cl.³ C01G *49/00, 51/00, 53/00*

U.S. Cl. 423—594 **12 Claims**

1. A process for the production of a fine ferrimagnetic spinel which comprises (1) forming a solvent solution containing nickel, zinc, and iron chelate, alcoholate or carboxylate salt metalorganic compounds in quantities and with metal valences that subsequently yield a spinel product corresponding to the formula:

$$M_1Fe_2O_4$$

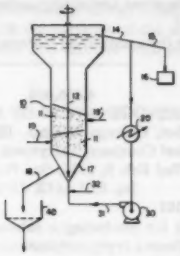
where M is nickel, zinc, or a combination thereof; (2) heating the solution of metalorganic compounds at a temperature between about 50°–150° C.; (3) treating the solution with ammonia or an organic amine to cause formation of a gelled solution; (4) removing solvent medium from the gelled solution to provide a solid-phase spinel precursor; and (5) pyrolyzing the spinel precursor in the presence of molecular oxygen at a temperature in the range between about 300°–800° C. to form a $M_1Fe_2O_4$ spinel composition having an average particle size less than about 1000 angstroms.

4,486,402

PROCESS FOR THE PREPARATION OF HIGH PURITY ALUMINAS STARTING FROM IMPURE ALUMINUM CHLORIDE SOLUTIONS

Bernard Gurtner, Grenoble; Robert Barral, Saint Symphorien D'Ozon, and Roland Bachelard, Lyons, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Dec. 15, 1982, Ser. No. 449,867
Claims priority, application France, Dec. 30, 1981, 81 24486
Int. Cl.³ B01D 9/02
U.S. Cl. 423—626 15 Claims



1. A process for the preparation of high purity alumina containing less than 0.1 weight percent of residual chlorine, starting from impure aluminum chloride solutions, comprising

(a) crystallization of aluminum chloride hexahydrate from the aluminum chloride solutions to provide crystals having a diameter of from about 400 to about 4000 micrometers in the presence of hydrochloric acid;

(b) separation by filtration-drainage of the aluminum chloride hexahydrate crystals so formed and washing the crystals with pure hydrochloric acid;

(c) pyrohydrolysis of the washed aluminum chloride hexahydrate crystals at a temperature of from about 700° to 1300° C., utilizing a gas passed through a layer thereof so as to remove the gaseous reaction products formed while hindering the possible movement of the solid along with the gas.

4,486,403

COMPOSITION FOR AND TREATMENT OF TEETH

Gerald Mechanic, 107B Bolinwood Apts., 500 Umstead Dr., Chapel Hill, N.C. 27514, and Itzhak Binderman, 13 Fievel St., Tel-Aviv, Israel

Filed Dec. 20, 1982, Ser. No. 450,926
Claims priority, application Israel, Jan. 1, 1982, 64700
Int. Cl.³ A61K 7/16, 7/22
U.S. Cl. 424—54 1 Claim

1. Method for the inhibition or elimination of the formation of dental caries, which comprises the steps of

applying to the teeth to be treated, a collagenase-inhibiting effective amount essentially of cysteine in free form or in the form of a pharmaceutically acceptable salt or complex, and

allowing said collagenase-inhibiting effective amount of cysteine to contact the teeth for a time sufficient to act on the teeth and inhibit the action of collagenase, thereby preventing the formation of dental caries.

4,486,404

TOOTH AND MOUTH CARE AGENTS

Wolfgang Weinert, Bad Schwalbach, Fed. Rep. of Germany, assignor to Blendax-Werke R. Schneider GmbH & Co., Rheinallee, Fed. Rep. of Germany

Filed Oct. 31, 1983, Ser. No. 547,417
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1982, 3241017
Int. Cl.³ A61K 7/22, 7/26
U.S. Cl. 424—54 4 Claims

1. A composition for tooth and mouth care containing at least 5% by weight urea and additionally 0.1 to 1% by weight horse chestnut extract.

4,486,405

PIGMENTED COSMETIC VEHICLE CONTAINING A MIXTURE OF ALKOXYLATED SURFACTANTS

Robert W. Klein, Fort Washington, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.

Filed Apr. 19, 1983, Ser. No. 486,382
Int. Cl.³ A61K 7/42, 7/021, 47/00; C04B 31/40
U.S. Cl. 424—59 15 Claims

1. An aqueous cosmetic coverup composition comprising:

about 23 to about 62 wt. percent of a cosmetically acceptable water insoluble pigment;

about 0.5 to about 6.5 wt. percent of a first alkoxylated surfactant having an average number of alkoxy monomer units of about 3 to about 40 and selected from the group consisting of a polyethoxylated ether of a fatty acid alcohol; a polyethoxylated ether derivative of lanolin or the partial fatty acid ester thereof; a polyethoxylated ether derivative of sorbitol or the partial fatty acid ester thereof; or a polyethoxylated ether derivative of glycerol or partial fatty acid ester thereof;

about 0.5 to about 6.5 wt. percent of a second alkoxylated surfactant having an average number of alkoxy monomer units of about 3 to about 40 and selected from the group consisting of a polyethoxylated fatty acid; a polypropoxy/polyethoxy copolymer; an acetylated derivative of said first alkoxylated surfactant; or a phosphated polyethoxylated fatty acid amine oxide or salt thereof;

about 30 to about 70 wt. percent of H_2O;

wherein the total amount of surfactants is about 2 to about 11.5 percent of the total composition weight and about 8.5 to about 19 percent of the pigment weight.

4,486,406

HAIR RINSE COMPOSITION

Yoshiaki Abe, Tokyo, and Hiroshi Watanabe, Funabashi, both of Japan, assignors to Kao Soap Co, Ltd., Tokyo, Japan

Filed Jan. 15, 1982, Ser. No. 339,630
Claims priority, application Japan, Feb. 20, 1981, 56-5923; Oct. 2, 1981, 56-157111
Int. Cl.³ A61K 7/06, 7/08
U.S. Cl. 424—70 2 Claims

1. A method of rinsing hair comprising applying to hair a composition of pH of 3–8 capable of imparting softness and antistatic property comprising 0.1–30% by weight of an α-mono (methyl-branched alkyl) glyceryl ether of the general formula (I)

$$ROCH_2CH(OH)CH_2OH \quad (I)$$

in which R represents a group of the following formula (II)

$$CH_3-(CH_2)_m-\underset{\displaystyle CH_3}{\underset{|}{CH}}-(CH_2)_n- \quad (II)$$

in which m is an integer of 2–14, and n is an integer of 3–11, provided that m+n is an integer of 9–21, the glyceryl ether having been dissolved in an aqueous medium.

4,486,407

METHOD FOR ENHANCING PRODUCTION OF INTERFERON

Fumiaki Taguchi, No. 14-1, Yokodai 5-chome, Sagamihara-shi, Kanagawa, Japan

Filed Feb. 28, 1983, Ser. No. 470,740
Int. Cl.³ A61K 45/02; C12P 21/00
U.S. Cl. 424—85 6 Claims

1. In a process for cellular production of interferon wherein during at least a portion of the time of production, the interferon production is carried out under the influence of an interferon inducing amount of an interferon inducer, the improvement which comprises also carrying out the cellular production of interferon under the influence of an interferon produc-

tion enhancement amount of sodium ethylenediaminetetraacetate.

4,486,408

INSOLUBLE CROSSLINKED CYTOTOXIC OXIDASE-PEROXIDASE SYSTEM

Johnathan L. Kiel, 2516 45th St., Lubbock, Tex. 79413, and Johannes Everse, 2613 Newcomb St., Lubbock, Tex. 79415

Filed Apr. 7, 1981, Ser. No. 251,694
Int. Cl.³ A61K *37/48*
U.S. Cl. 424—94 **46 Claims**

1. A process for preparing a composition of matter possessing cytotoxic activity toward prokaryotic and eukaryotic cells comprising the steps of:

a. mixing in a buffer solution:

a first enzyme which is an oxidase;

a second enzyme which is a peroxidase, wherein said second enzyme is capable of chemically cross-linking with said first enzyme, and wherein both enzymes remain active; and

a support;

b. adding a polymerizing agent to said solution; and

c. allowing said solution to polymerize; and

wherein the final composition of said composition of matter forms a cross-linked composition.

11. A composition of matter possessing cytotoxic activity toward prokaryotic and eukaryotic cells comprising:

a. a first enzyme which is an oxidase

b. a second enzyme which is a peroxidase, wherein said second enzyme is chemically cross-linked with said first enzyme, and wherein both enzymes remain active;

c. a support;

wherein said first enzyme, said second enzyme, and said support are mixed in a buffer solution; and

d. a polymerizing agent which is added to said solution, whereby said solution is polymerized; and

wherein the final composition of said composition of matter forms a cross-linked composition of matter.

25. A process for cytolysis of prokaryotic and eukaryotic cells in living organisms comprising the steps of:

a. preparing a mixture of a support and a composition of matter possessing cytolysis activity toward prokaryotic and eukeryotic cells in living organisms, wherein said composition of matter is cross-linked with said support and is formed by:

mixing in a buffer solution a first enzyme which is an oxidase, a second enzyme which is a peroxidase, and said support; and

polymerizing said composition of matter by adding a polymerizing agent thereto such that the final composition of said composition of matter forms a cross-linked composition; and

b. inserting said mixture into a living organism.

4,486,409

INDUCER OF T-SUPPRESSOR CELLS

Marcia F. Goldfarb, 217 Read St., Portland, Me. 04103

Filed Feb. 3, 1984, Ser. No. 576,945
Int. Cl.³ A61K *35/12, 37/02*; C07G *7/00, 15/00*
U.S. Cl. 424—95 **7 Claims**

1. A biologically active composition extracted from thymus tissue, capable of inducing immature bone marrow cells to differentiate into competent suppressor T-cells, comprising a factor which is heat stable to 80° C. and has a pI of 4.2–4.4, a molecular weight of about 65,000 daltons as calculated by gel filtration, and a molecular weight between about 43,000 and about 47,000 daltons as calculated by two-dimensional electrophoresis.

2. A process for extracting from thymus tissue a factor capable of inducing immature bone marrow cells to differentiate into competent suppressor T-cells, the steps of which comprise:

A. preparing a crude thymus extract;

B. fractionating said crude thymus extract by molecular sieve chromatography to isolate a 70,000 to 25,000 dalton fraction;

C. contacting said 70,000 to 25,000 dalton fraction with an immunoadsorbent containing antiserum to bovine serum albumin;

D. fractionating the unadsorbed material from step C by molecular sieve chromatography to isolate a 70,000 to 50,000 dalton fraction;

E. contacting said 70,000 to 50,000 dalton fraction with an immunoadsorbent containing antiserum to bovine whole serum; and

F. collecting the unadsorbed material from step E.

4,486,410

HEAT DEFIBRINOGENATION OF AHF PREPARATION

Joseph D. Fisher, Chicago Heights, Ill., assignor to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Feb. 9, 1984, Ser. No. 578,724
Int. Cl.³ A61K *35/16*
U.S. Cl. 424—101 **14 Claims**

1. A method for producing a substantially fibrinogen-free AHF product from a cryoprecipitate containing as its primary components AHF and fibrinogen comprising:

a., suspending thawed cryoprecipitate in a low molar buffer solution;

b., rapidly raising the temperature of the suspension to 50° to 55° C.;

c., maintaining the temperature of the suspension for 1.5±0.5 minutes to obtain a two-phase suspension;

d., rapidly cooling the two-phase suspension to a temperature of about 10°–15° C.;

e., centrifuging the two-phase suspension at about 10°–15° C.; and

f., decanting the supernatant containing AHF.

4,486,411

BETA-LACTAMASE INHIBITING 6-BETA-SULFONYLOXYPENICILLANIC ACID DERIVATIVES

Ernest S. Hamanaka, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 132,443, Mar. 21, 1980, abandoned. This application Jul. 1, 1981, Ser. No. 279,404
Int. Cl.³ A61K *35/00*
U.S. Cl. 424—114 **26 Claims**

1. A method of treating bacterial infections in a mammal which comprises administering to said mammal an effective synergistic mixture of a beta-lactam antibiotic selected from the group consisting of penicillin G sodium, penicillin G potassium, penicillin G procaine, penicillin V, ampicillin sodium, ampicillin trihydrate, amoxicillin, carbenicillin disodium, cefachlor, cefaperazone sodium, cephradine cephaloridine, cefazolin sodium, cephalothin sodium, and cephalexin monohydrate, in the amount of 1–4 g./day in single or divided doses, together with a compound of the formula

a pharmaceutically acceptable salt thereof, or a pivaloyloxymethyl, acetoxymethyl, 1,3-dihydro-3-oxo-benzo[c]furan-1-yl or 1-ethoxycarbonyloxyethyl ester thereof, wherein R is hydrogen or phenyl, in an amount substantially equal by weight to said beta-lactam antibiotic.

4,486,412

ENCAPSULATED ANTACID DISPERSIONS

Dilip Shah, Parsippany; Lionel Borkan, New Vernon, and Ira R. Berry, Westfield, all of N.J., assignors to Pharmacaps, Inc., Elizabeth, N.J.

Filed Mar. 15, 1983, Ser. No. 475,491

Int. Cl.³ A61K *33/10, 33/08, 33/06, 33/42*

U.S. Cl. 424—156 **25 Claims**

1. A pharmaceutical unit dosage form comprising a soft gelatin capsule containing a dispersion of particles of a pharmaceutially-effective amount of a basic salt in a substantially water-free liquid carrier comprising a mixture of polyalkylene glycol and a C_2–C_5 polyol; said carrier being present in an amount effective to coat the particles of the salt and thereby render them substantially non-reactive with said gelatin capsule.

4,486,413

PROTEIN CONTAINING CONDITIONING DRINK

Alfred Wiesenberger, Wiesbaden-Sonnenberg; Erich Kolb, Nieder-Olm, and Iris Engelhardt, Hochheim, all of Fed. Rep. of Germany, assignors to Firma Peter Eckes, Nieder-Olm, Fed. Rep. of Germany

Filed Sep. 10, 1982, Ser. No. 416,761

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1981, 3137440

Int. Cl.³ A61K *37/00;* **A23L** *2/00, 1/30;* **A23C** *17/00;* **A23J** *1/00;* **A23K** *1/175*

U.S. Cl. 424—177 **12 Claims**

1. Protein-containing conditioning drink consisting essentially of 30 to 90 wt.% of a fruit juice or of a mixture of fruit juices having a solids content of 4 to 20 wt.%; 2 to 20 wt.% of a whey concentrate corresponding to a whey protein content of 1.2 to 5 wt.% and whose lactose content is enzymatically cleaved; mineral salts and vitamins; and having a pH of 4.0 to 5.0.

4,486,414

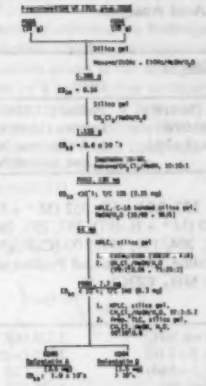
DOLASTATINS A AND B CELL GROWTH INHIBITORY SUBSTANCES

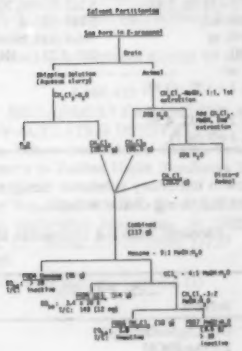
George R. Pettit, Paradise Valley, Ariz., assignor to Arizona Board of Regents, Tempe, Ariz.

Filed Mar. 21, 1983, Ser. No. 477,045

Int. Cl.³ A61K *37/02;* **C07G** *7/00*

U.S. Cl. 424—177 **7 Claims**





1. Cell growth inhibitory substance designated dolastatin A which has the following characteristics:

Physical Data for Dolastatin A

TLC, silica gel:

Rf	Solvent	Ratio
0.53	CH_2Cl_2/MeOH/H_2O	90:10:0.8
0.49	EtOAc/EtOH	80:20
0.33	EtOAc/EtOH	90:10
0.15	CH_2Cl_2/MeOH/H_2O + 5% HOAc	90:10:0.8
0.68	CH_2Cl_2/MeOH/H_2O − 5% Et_2NH	90:10:0.8

TLC, silica gel visualization:

UV	++
H_2SO_4	−
Anisaldehyde pale yellow	−
Ninhydrin	
Dragendorf orange,	before heating
	− after heating
Phosphomolibdic	+

-continued

acid

IR, KBr: 3430, 2964, 2938, 2874, 1731, 1663, 1630, 1446, 1379, 1308, 1252, 1192,
UV (MeOH): λ_{max} 202, 204, 206 nm (E 8248), λ_{max} 237 nm (E 3461).
Elemental Analysis: C, 63.34; H, 10.06; N, 12.10; S, 5.64;
Amino Acid Analysis:

Hydrolysis by:	
H^+	OH^-
Proline (16.61%)	Proline (11.63%)
Valine (4.99%)	Leucine (10.49%)
Leucine (8.63%)	no Valine was found
	+ one unidentified compound

MS: FAB: 837 (M^++H), 552 (M^++H-285), 498 (M^++H-339), 340 (M^++H-497), 297, 295, 288, 286, 258, 227, 215, 213, 207, 204, 199, 197, 100 ($C_6H_{14}N^+$), 86, 72, 70, 45;
GCMS: Valine, Leucine and Proline identified;
NMR: 400 MH_2, $CDCl_3$, δ:

0.763 (3H, d, J=6.56H_2)	3.732 (3H, S)
0.908 (~3H, d, J=7.16)	3.775 (~2H, dd, J=4.56, 14.68)
0.926 (~6H, d, J=7.64)	3.877 (1H, broad t, J=?)
1.019 (3H, d, J=6.44)	4.618 (1H, t, J=~6.10)
1.057 (3H, d, J=6.84)	4.699 (1H, S)
1.232 (?, impurity, ~1H, S)	4.736 (1H, t, J=3.72)
1.294 (1H, t, J=7.00, impurity?)	4.818 (1H, dd, J=2.46, 8.70)
1.558 (7-8H, broad S, H_2O?)	5.115 (1Hd, J=11.04)
1.845 (1H, td, J=11.76, 5.88)	5.282 (2-3H, S)
2.02-2.03 (~3H, m)	5.869 (1H, d, J=2.48)
2.12-2.14 (~2H, m	~5.9 (1H, broad peak)
2.05-2.3 (~11H, m)	712-7.21 (~5H, m)
~2.35 (~1H, m)	
3.026 (1H, dd, J=3.32, 13.92)	
3.157 (3H, S)	
3.513 (1H, dd, J=14.12, 4.36	
3.581 (1H, dd, J=7.16, ?).	

2. Cell growth inhibitory substance designated dolastatin B which has the following characteristics:

Physical Data for Dolastatin B

TLC, silica gel:		
Rf	Solvent	Ratio
0.14	CH_2Cl_2:MeOH:H_2O	90:10:0.8
~0.	EtOAc:EtOH	80:20
~0.	EtOAc:EtOH	90:10
0.33	CH_2Cl_2:MeOH:H_2O + 5% HOAc	90:10:0.8
0.54	CH_2Cl_2:MeOH:H_2O + 5% Et_2NH	90:10:0.8

Visualization on TLC (silica gel):	
UV	++
H_2SO_4	–
Anisaldehyde	pale yellow
Ninhydrin	–
Dragendorf	orange before heating
	– after heating
Phosphomolibdic acid	+

IR, KBr: 3433, 2963, 2925, 2873, 2852, 1729, 1668, 1661, 1630, 1567, 1445, 1383, 1306, 1253, 1190,
UV (MeOH): λ_{max} 203, 206, nm (E 8332), λ_{max}238 nm (E 3525),
MS: FAB: 853 (M^++H, (837), 823, (611), (583), 568, (552), 498, 356, 340, 326, 297, 296, 295, 288, 286, 281, (277?), 274, (243), 215, 213, 204 (197), (185?), 182, (154), 144, (131), (115?, 114, 112), 100, 98, (93?), 91, 86, 84, 83, (75?), 72, 70, 69, (61), (57?), 55, 45, 43, 41, 39, 31, 29, m/e 86 $C_5H_{12}N$, m/e 100 $C_6H_{14}N$,
NMR: 400 MH_2, $CDCl_3$, δ:

0.7715 (3H, d, J=6.28H_2)	3.4728 (1H, S)
0.8588 (3H, t, J=6.70H_2)	3.527 (1H, dd, J=14.4 and 5.2H_2)
0.9076 (3H, d, J=7.04H_2)	3.602 (1H, m)
0.9350 (3H?, d, J=6.36H_2)	3.665 (?)
0.9864 (3H, S?)	~3.72 (1H, m)
1.0392 (3H, d, J=6.80H_2)	3.733 (3H, S)
1.0567 (3H, d, J=7.16H_2)	3.800 (1H, dd, J=?)
1.295~1.315 (~1~2H, m)	3.89 (1H, broad t, J=?)
1.405 (~1H, S) impurity?	4.62 (1H, broad t, J=?)
1.79-1.90 (1~2H)	4.701 (1H, S)
2.02-2.06 (22-26H)	4.757 (1H, t or d)
2.10-2.22	4.825 (1H, dd, J=8.8 and ? H_2)
2.22-2.27	5.125 (1H, d, J=12H_2)
2.32-2.40	5.281 (~9H, S, ?, CH_2Cl_2?)
~2.55 (~2H, broad peak)	5.876 (1H, d, J=?)
3.043 (1H, dd, J=14.4 and 3.3H_2)	7.11-7.22 (4-5H, m)
3.152 (3H, S)	~7.75 (1H, broad peak)

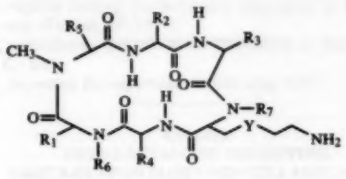
4,486,415

CYCLIC HEXAPEPTIDE SOMATOSTATIN ANALOGS

Roger Freidinger, Hatfield, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

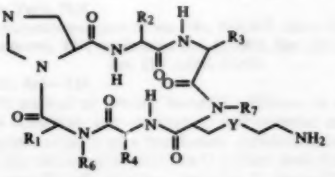
Filed Aug. 15, 1983, Ser. No. 523,224
Int. Cl.[3] A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 10 Claims

1. A compound having the formula:



I

and



II

wherein
X is $(CH_2)_n$ wherein n is 0, 1 or 2 or sulfur;
Y is $(CH_2)_m$ wherein m is 0, 1 or 2 or sulfur such that the sulfur may be in any position along the chain;
R_1 and R_2 are independently lower alkyl, benzyl, substituted benzyl wherein the substituent may be one or two of loweralkyl, halogen, hydroxy, amino, nitro or loweralkoxy; and loweralkyl substituted with hydroxy, carboxy, amino, guanidino, or a 5- or 6-membered heterocyclic ring;
R_3 is 3-indolylmethyl or substituted 3-indolylmethyl wherein the substituent may be loweralkyl, loweralkoxy or halogen;
R_4 is loweralkyl, hydroxyloweralkyl, benzyl, carboxyloweralkyl, aminoloweralkyl or substituted hydroxy benzyl wherein the substituent may be loweralkyl, loweralkoxy, hydroxy, halogen, amino or nitro;
R_5 is loweralkyl, benzyl, or substituted benzyl wherein the

substituent is loweralkyl, loweralkoxy, hydroxy, halogen, amino or nitro; and

R_6 and R_7 are independently hydrogen or straight chain loweralkyl provided at least one of R_6 and R_7 is loweralkyl.

4,486,416
PROTECTION OF HUMAN AND ANIMAL CELLS SUBJECT TO EXPOSURE TO TRAUMA

David B. Soll, 5001 Frankford Ave., Philadelphia, Pa. 19124, and Sol E. Harrison, 1627 Buck Hill Dr., Huntingdon Valley, Pa. 19006

Filed Mar. 2, 1981, Ser. No. 239,791
Int. Cl.³ A61K *31/715*
U.S. Cl. 424—180 12 Claims

1. A method of protecting human and animal corneal endothelial cells subject to exposure to trauma, which comprises administering a prophylactically effective amount of chondroitin sulfate to said cells such that chondroitin sulfate is present during said exposure to said trauma.

10. A method of protecting corneal endothelial cells of a patient from the adverse effects otherwise caused by the implantation of an intraocular lens in the eye of a patient which comprises administering a prophylactically effecting amount of chondroitin sulphate such that said chondroitin sulphate is in contact with the cells and present during said implantation.

4,486,417
FLUROCARBON-WATER EMULSION FOR HYPERALIMENTATION CONTAINING MALTOSE

Kaname Sugimoto, and Toshio Miyake, both of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Nov. 12, 1981, Ser. No. 320,745
Claims priority, application Japan, Dec. 2, 1980, 55-170766
Int. Cl.³ A61K *31/70*; A01N *57/26*
U.S. Cl. 424—180 2 Claims

1. In an intravenously injectable fluorocarbon-water emulsion of the type wherein a pharmaceutically-acceptable fluorocarbon having an oxygen carrying capacity is emulsified in water, the improvement comprising an emulsion of:

(a) 1-50 w/w % of said fluorocarbon;

(b) 0.1-10 w/w % of an emulsifier selected from the group consisting of soy bean lecithin, egg lecithin and oxyethylene-propylene copolymer;

(c) 1-20 w/w % of a pyrogen-free high-purity maltose having a maltose content of 80% d.s.b. or higher; and

(d) said water ad 100 w/w %;

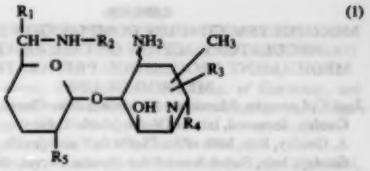
said emulsion having an average particle size of 0.1-0.3μ in diameter.

4,486,418
2'-DEAMINO AMINOGLYCOSIDES AND COMPOSITION THEREOF

Isamu Watanabe; Takashi Yamaguchi; Kazuhiro Kamiya, and Toshihito Mori, all of Higashimurayama, Japan, assignors to Kowa Company, Ltd., Nagoya, Japan

Filed Jun. 6, 1983, Ser. No. 501,392
Claims priority, application Japan, Jun. 4, 1982, 57-94900
Int. Cl.³ A61K *31/71*; C07H *15/22*
U.S. Cl. 424—180 3 Claims

1. An aminoglycoside represented by the following formula (I)

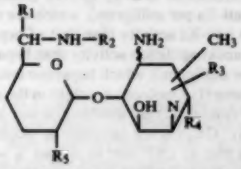


(I)

wherein each of R_1 and R_2 represents a hydrogen atom or a methyl group, R_3 represents a hydrogen atom or an aminoacyl group having 2 to 4 carbon atoms in the acyl group, R_4 represents a hydrogen atom or a hydroxyl or methoxy group, and R_5 represents a hydrogen atom or a hydroxyl group, or a pharmaceutically acceptable acid addition salt thereof.

2. An antibiotic composition which comprises

(i) an antibiotically effective amount of a compound having the following formula (I)



wherein each of R_1 and R_2 represents a hydrogen atom or a methyl group, R_3 represents a hydrogen atom or an aminoacyl group having 2 to 4 carbon atoms in the acyl group, R_4 represents a hydrogen atom or a hydroxyl or methoxy group, and R_5 represents a hydrogen atom or a hydroxyl group, or a pharmaceutically acceptable acid addition salt thereof, and

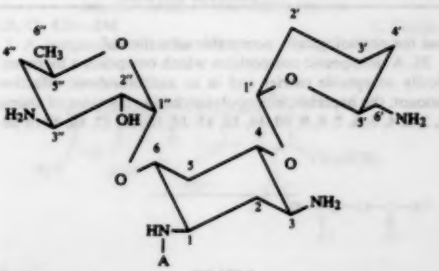
(ii) a pharmaceutically acceptable diluent or carrier.

4,486,419
5,2',3',4',4'',6''-HEXADEOXYKANAMYCIN AND ITS 1-N-ACYLATED DERIVATIVE

Hamao Umezawa, Tokyo, and Shinichi Kondo, Yokohama, both of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Japan

Filed Sep. 14, 1983, Ser. No. 532,058
Claims priority, application Japan, Sep. 20, 1982, 57-162292
Int. Cl.³ A61K *31/71*; C07H *15/22*
U.S. Cl. 424—180 6 Claims

1. A compound of the general formula (I)



(I)

wherein A denotes a hydrogen atom or an (S)-4-amino-2-hydroxybutyryl group, or a pharmaceutically acceptable acid-addition salt thereof.

6. An antibacterial composition which comprises an antibacterially effective amount of 5,2',3',4',4'',6''-hexadeoxykanamycin or 1-N-[(S)-4-amino-2-hydroxybutyryl]-5,2',3',4',4'',6''-hexadeoxykanamycin or a pharmaceutically acceptable acid-addition salt thereof as defined in claim 1, in combination with a carrier for the active ingredient.

4,486,420

MUCOPOLYSACCHARIDE COMPOSITION HAVING A REGULATORY ACTION ON COAGULATION, MEDICAMENT PROCESS FOR PREPARATION AND METHOD OF USE

Jean C. Lormeau, Maromme La Maine; Jean Choay, Paris; Jean Goulay, deceased, late of Oissel; Marie T. Goulay, heir; Marie A. Goulay, heir, both of St. Pierre de Varangeville, and Gerard Goulay, heir, Saint Amand des Hautes Terres, all of France, assignors to Choay, S.A., Paris, France

Continuation-in-part of Ser. No. 204,505, Nov. 6, 1980, which is a continuation of Ser. No. 091,164, Nov. 5, 1979, abandoned.

This application Sep. 14, 1981, Ser. No. 301,611

Claims priority, application France, Nov. 6, 1978, 78 31357; Jul. 20, 1979, 79 18873

Int. Cl.³ A61K *31/727*; C08B *37/10*

U.S. Cl. 424—183 **29 Claims**

1. Heparinic mucopolysaccharide fractions which have improved antithrombotic activity in vivo (measured in terms of activity of anti-Xa per milligram), which are more selective with respect to anti-Xa activity than that of heparin and have a lower whole anticoagulation activity than heparin (measured in USP units per milligram), which heparinic mucopolysaccharide fractions have (1) a molecular weight in the range of about 2,000 to 10,000 daltons, (2) are soluble in water-alcohol having a titer of 55°-61° GL, (3) are insoluble in alcohol, (4) have a ratio of anti-Xa titer to USP titer of at least 3, wherein in said heparinic mucopolysaccharides, fractions comprise, (5) glucosamine units which are sulfated in the primary position, (6) one N-acetyl glucosamine unit for two 2-O-sulfate iduronic acid units and for two N-sulfate-glucosamine units, the carbon-13 NMR spectrum in H_2O (at a radiation of 20 MHz) having the following resonance signals (in the stated regions) indicating the presence of the stated atoms:

23.4 ppm:	CH_3 of NH—acetyl group,
54.7 ppm:	carbons in position 2 of the acetylated glucosamine moieties,
59.2 and 58.8 ppm:	carbons in position 2 of the sulfate glucosamine moieties (splitting),
61.7 ppm:	carbons in position 6 with —OH groups,
67.4 ppm:	carbons in position 6 with —O—sulfated groups,
98.3[x] [x]ppm:	carbons in position 1,
100.00 ppm[xx]:	carbons in position 1 of the sulfated iduronic acid units, and
103 ppm:	carbons in position 1 of the glucuronic acid units,

and the physiologically acceptable salts thereof.

21. A therapeutic composition which comprises a therapeutically acceptable carrier and in an antithrombotic effective amount, the heparinic mucopolysaccharide fractions of claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20.

4,486,421

INSECTICIDAL PHOSPHORUS DERIVATIVES OF 4-PYRIMIDINOLS

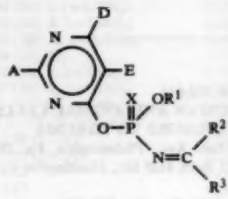
Mark J. Costales, Concord; Doris L. Paroonagian, Pleasant Hill, and Walter Reifschneider, Walnut Creek, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 22, 1982, Ser. No. 443,272

Int. Cl.³ A01N *57/32*; C07F *9/65*

U.S. Cl. 424—200 **12 Claims**

1. A compound corresponding to the formula



wherein

A represents hydrogen, alkyl, alkoxy, perfluoroloweralkyl, cycloalkyl, alkyl(cycloalkyl), (cycloalkyl)alkyl, phenyl, alkylthioalkyl, alkoxyalkyl, dialkylaminoalkyl, alkylthio, alkylsulfinyl, alkylsulfonyl, phenylthio, phenylsulfinyl, phenylsulfonyl, (alkylthio)alkylthio, alkoxyalkylthio, dialkylaminoalkylthio, dialkylamino, morpholino, piperidino, N-methylpiperazino, pyrrolidino or ((dimethylamino)methylene)amino (—N=CH—$N(CH_3)_2$);

D represents hydrogen, alkyl, alkylthio, dialkylamino, morpholino, piperidino, N-methyl piperazino, pyrrolidino or perfluoroloweralkyl;

E represents hydrogen, alkyl or halo;

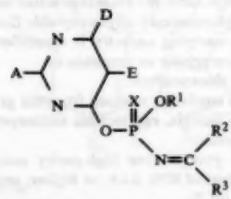
X represents oxygen or sulfur;

R^1 represents alkyl;

R^2 represents alkyl, alkoxy or dialkylamino; and

R^3 represents hydrogen or alkyl.

9. A method for the kill and control of insects which comprises contacting said insects or their habitat with a composition comprising an inert carrier in intimate admixture with an insecticidally effective amount of an active compound corresponding to the formula



wherein

A represents hydrogen, alkyl, alkoxy, perfluoroloweralkyl, cycloalkyl, alkyl(cycloalkyl), (cycloalkyl)alkyl, phenyl, alkylthioalkyl, alkoxyalkyl, dialkylaminoalkyl, alkylthio, alkylsulfinyl, alkylsulfonyl, phenylthio, phenylsulfinyl, phenylsulfonyl, (alkylthio)alkylthio, alkoxyalkylthio, dialkylaminoalkylthio, dialkylamino, morpholino, piperidino, N-methylpiperazino, pyrrolidino or ((dimethylamino)methylene)amino (—N=CH—$N(CH_3)_2$);

D represents hydrogen, alkyl, alkylthio, dialkylamino, morpholino, piperidino, N-methyl piperazino, pyrrolidino or perfluoroloweralkyl;

E represents hydrogen, alkyl or halo;

X represents oxygen or sulfur;

R^1 represents alkyl;

R^2 represents alkyl, alkoxy or dialkylamino; and

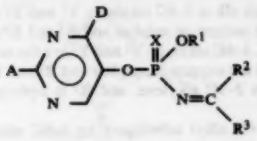
R^3 represents hydrogen or alkyl.

4,486,422
INSECTICIDAL PHOSPHORUS DERIVATIVES OF 5-PYRIMIDINOLS

Mark J. Costales, Concord; Walter Reifschneider, Walnut Creek, and Doris L. Parooaagian, Pleasant Hill, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 22, 1982, Ser. No. 443,418
Int. Cl.³ C07F 9/65; A01N 57/32
U.S. Cl. 424—200 24 Claims

1. A compound corresponding to the formula



wherein

A represents hydrogen, alkyl, alkoxy, perfluoroloweralkyl, cycloalkyl, alkyl(cycloalkyl), (cycloalkyl)alkyl, phenyl, alkylthioalkyl, alkoxyalkyl, dialkylaminoalkyl, alkylthio, alkylsulfinyl, alkylsulfonyl, phenylthio, phenylsulfinyl, phenylsulfonyl, (alkylthio)alkylthio, alkoxyalkylthio, dialkylaminoalkylthio, dialkylamino, morpholino, piperidino, N-methylpiperazino, pyrrolidino or ((dimethylamino)methylene)amino (—N=CH—N(CH$_3$)$_2$);

D represents hydrogen or alkyl;

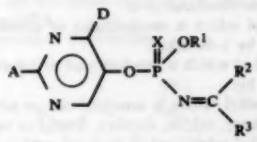
X represents oxygen or sulfur;

R^1 represents alkyl;

R^2 represents alkyl, alkoxy or dialkylamino; and

R^3 represents hydrogen or alkyl.

17. A method for the kill and control of insects which comprises contacting said insects or their habitat with a composition comprising an inert carrier in intimate admixture with an insecticidally effective amount of an active compound corresponding to the formula



wherein

A represents hydrogen, alkyl, alkoxy, perfluoroloweralkyl, cycloalkyl, alkyl(cycloalkyl), (cycloalkyl)alkyl, phenyl, alkylthioalkyl, alkoxyalkyl, dialkylaminoalkyl, alkylthio, alkylsulfinyl, alkylsulfonyl, phenylthio, phenylsulfinyl, phenylsulfonyl, (alkylthio)alkylthio, alkoxyalkylthio, dialkylaminoalkylthio, dialkylamino, morpholino, piperidino, N-methylpiperazino, pyrrolidino or ((dimethylamino)methlene)amino (—N=CH—N(CH$_3$)$_2$);

D represents hydrogen or alkyl;

X represents oxygen or sulfur;

R^1 represents alkyl;

R^2 represents alkyl, alkoxy or dialkylamino; and

R^3 represents hydrogen or alkyl.

4,486,423
STABLE FENTANYL COMPOSITION

Thomas M. Kenyhercz, Hillsborough, N.J., assignor to Janssen Pharmaceutica Inc., Piscataway, N.J.

Filed Apr. 21, 1983, Ser. No. 487,349
Int. Cl.³ A61K 31/445
U.S. Cl. 424—267 8 Claims

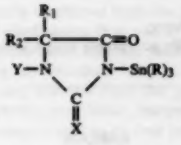
1. A fentanyl composition consisting essentially of fentanyl citrate, water, and a sufficient amount of a pharmaceutically acceptable acid to reduce the pH to 3.2±0.2.

4,486,424
TRIORGANOTIN HYDANTOIN COMPOUNDS, AND THE USE THEREOF FOR COMBATING INSECTS AND ACARIDS

Wolfgang Wehner, Zwingenberg, Fed. Rep. of Germany, and Peter Ackermann, Pfeffingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 4, 1982, Ser. No. 432,479
Claims priority, application Switzerland, Oct. 13, 1981, 6543/81; Aug. 11, 1982, 4808/82
Int. Cl.³ A01N 55/04; C07F 7/22
U.S. Cl. 424—245 9 Claims

1. A compound of the formula:



wherein

R is alkyl of 1 to 8 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, phenyl or 2-methyl-2-phenylpropyl; each of R$_1$ and R$_2$, when taken independently of the other is hydrogen, alkyl of 1 to 8 carbon atoms, phenyl, or hydroxyphenyl, or

R$_1$ and R$_2$ taken together are oxygen or alkylene of 5 to 7 carbon atoms;

X is oxygen or sulfur; and

Y is hydrogen or Sn(R)$_3$ in which R is as defined above.

8. A composition for combatting insects and acarids which comprises an effective amount of a compound according to claim 1 in combination with a carrier.

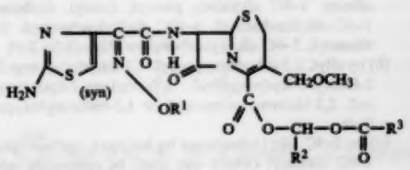
9. The method of combatting insects and acarids which comprises applying thereto or to their locus an effective amount of a compound according to claim 1.

4,486,425
7-[2-(2-AMINOTHIAZOL-4-YL)-2-(SYN)-METHOXYIMINOACETAMIDO]-3-METHOXYMETHYL-3-CEPHEM-4-CARBOXYLATES

Hideo Nakao; Koichi Fujimoto; Sadao Ishihara; Shinichi Sugawara, and Isamu Igarashi, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Sep. 23, 1981, Ser. No. 304,988
Claims priority, application Japan, Sep. 30, 1980, 55-136449; Apr. 13, 1981, 56-55231; Jun. 10, 1981, 56-89116
Int. Cl.³ A61K 31/545; C07D 501/34
U.S. Cl. 424—246 12 Claims

1. A compound of the formula



wherein

R^1 is methyl;

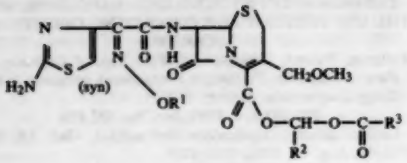
R^2 is hydrogen or methyl;

and

R^3 is a C$_1$–C$_4$ alkoxy;

and pharmaceutically acceptable acid addition salts thereof.

7. A pharmaceutical composition for oral administration comprising an effective amount of an antibiotic in admixture with a pharmaceutically acceptable carrier or diluent, said antibiotic comprising a compound of the formula



wherein

R^1 is methyl;

R^2 is hydrogen or methyl;

and

R^3 is a C_1–C_4 alkoxy;

and pharmaceutically acceptable acid addition salts thereof.

4,486,426

UNSATURATED CEPHALOSPORIN DERIVATIVES

Frederich H. Jung, Rilly la Montaque, France, and Gareth M. Davies, Macclesfield, England, assignors to Imperial Chemical Industries PLC, Hertfordshire, England

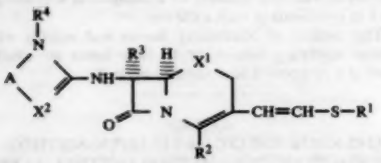
Filed Jul. 19, 1982, Ser. No. 399,875

Claims priority, application European Pat. Off., Jul. 23, 1981, 81401179.7

Int. Cl.[3] C07D *501/18*; A61K *31/425*

U.S. Cl. 424—246 6 Claims

1. A cephalosporin derivative of the formula I:



in which X^1 is sulphur; R^1 is

(1) pyridazin-3-yl substituted in the 6-position by 1–6C alkyl, methoxy, amino or 1–6C alkanoylamino, or the N-oxide thereof, or pyrimidin-2-yl or tetrazolo[4,5-b]-pyridazin-6-yl;

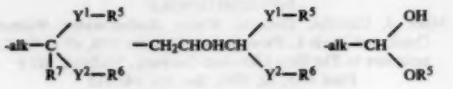
(2) 5,6-dioxo-1,4,5,6-tetrahydro-1,2,4-triazin-3-yl substituted in the 4-position; 1,3,4-triazol-5-yl or 2-alkoxycarbonyl-1,3,4-triazol-5-yl in which the alkoxycarbonyl is 2–6C, each substituted in the 1-position:

(a) by 1–6C alkyl, unsubstituted or substituted by 1–6C alkoxy, 1–6C alkylthio, phenyl, formyl, carbamoyl, 2–6C alkylcarbamoyl, 3–10C dialkylcarbamoyl, 1–6C alkanoyl, 2–6C alkoxycarbonyl or thiazolidin-2-yl;

(b) by allyl, 2,3-dihydroxypropyl, 1,3-dihydroxyprop-2-yl, 2-formyl-2-hydroxyethyl, 3-formyloxy-2-hydroxypropyl, 2,3-bisformyloxypropyl or 1,3-bisformyloxyprop-2-yl;

(c) by 2–4C alkyl substituted by hydroxy, carbamoyloxy, 1–6C alkanoyl (which can itself be optionally substituted by amino, 1–6C alkylamino or 2–10C dialkylamino), 1–6C alkanesulphinyl, 1–6C alkanesulphonyl, amino, 1–6C alkylamino, 2–10C dialkylamino, sulphoamino, 1–6C alkanesulphonylamino, sulphamoylamino, 1–6C alkanoylamino which is unsubstituted or which can itself be substituted by hydroxy, amino, 1–6C alkylamino or 2–10C dialkylamino), 2–6C alkoxycarbonylamino, ureido, 2–6C alkylureido, or 3–10C dialkylureido;

(d) by a radical of the formula II, III or IV:



II III IV

in which alk is 1–4C alkylene, Y^1 and Y^2 are the same and are oxygen or sulphur and R^5 and R^6 are the same and are 1–6C alkyl, or Y^1 and Y^2 are the same or different and are oxygen or sulphur and R^5 and R^6 are joined to form 2–3C alkylene, and R^7 is hydrogen or 1–3C alkyl;

(e) by 1–6C alkyl substituted by 1–6C alkoxyimino or hydroxyimino;

(3) 1,4-dialkyl-5,6-dioxo-1,4,5,6-tetrahydro-hydro-1,2,4-triazin-3-yl, 1-alkyl-5,6-dioxo-1,4,5,6-tetra-tetrahydro-1,2,4-triazin-3-yl in each of which the alkyl is 1–6C;

(4) 1,3,4-triazol-5-yl, 1,2,3-triazol-5-yl or 1-alkyl-1, 2,3-triazol-5-yl in which the alkyl is 1–6C which is unsubstituted or substituted in the 3-position by 2–6C alkoxycarbonyl;

(5) a. 1,3,4-thiadiazol-5-yl which is unsubstituted or substituted by 1–6C alkyl, trifluoromethyl, 1–6C alkoxy, 1–6C alkylthi, 2–4C hydroxyalkylthio, 1–6C alkanesulphonyl hydroxy, 1–6C hydroxyalkyl, carboxy, 2–6C carboxyalkyl, amino, 1–6C alkylamino, 2010C dialkylamino, 1–6C aminoalkyl, 2–8C alkylaminoalkyl, 3–12C dialkylamino-alkyl, 1–6C alkanoylamino or 2–8C alkanoylamino-alkyl, or

b. 1,2,4-thiadiazol-5-yl substituted by 1–6C alkyl or 1–6C alkoxy;

(6) a. 1,3,4-oxadiazol-5-yl which is unsubstituted or substituted by 1–6C alkyl, trifluoromethyl, phenyl, 1–6C aminoalkyl, 2–8C alkylaminoalkyl, 3–10C dialkylaminoalkyl or 2–8C alkanoylaminoalkyl or

b. oxazol-2-yl which is unsubstituted or substituted in the 4-position by 1–6C alkyl;

(7) tetrazol-5-yl which is unsubstituted or substituted in the 1-position by:

(a) 1–6C alkyl which is unsubstituted or substituted by 1–6C alkoxy, sulpho, carboxy, formyl or sulphamoyl;

(b)2–4C alkyl substituted by hydroxy, amino, 1–6C alkylamino, 2–8C dialkylamino, 1–6C alkanoyl-amino, 2–6 carboxyalkylamino, sulphamoylamino, sulphoamino, ureido, 206C alkylureido or 3–8C dialkylureido;

(c) 1–5C alkyl substituted by hydroxyimino or 1–6C alkoxyimino;

(d) phenyl, 2,3-dihydroxypropyl, 1,3-dihydroxy-prop-2-yl, 2-formyl-2-hydroxyethyl, 3-formyloxy-2-hydroxypropyl, 2,3-bisformyloxypropyl or 1,3-bisformyloxy-2-propyl; or

(e) a radical of the formula II above in which R^7 is hydrogen, or a radical of the formula III above, in both of which Y^1, Y^2, R^5 and R^6 are as given above;

R^2 is a carboxy radical; X^2 is nitrogen; R^3 is hydrogen; R^4 is hydrogen and —A— is a radical of the formula V:

V

in which R^9 and R^{10} are hydrogen and the pharmaceutically-acceptable acid- or base-addition salts thereof.

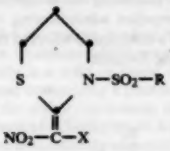
4,486,427

INSECTICIDAL N-SUBSTITUTED-2-(HALONITROMETHYLENE) TETRAHYDRO-2H-1,3-THIAZINES

Herbert Estreicher, and Samuel B. Soloway, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 17, 1983, Ser. No. 476,008
Int. Cl.³ A01N *43/86*; C07D *279/06*
U.S. Cl. 424—246 **8 Claims**

1. A compound of the formula



wherein X is bromine, chlorine or fluorine and R contains up to 20 carbon atoms and is alkyl or alkyl substituted by one or more halogen atoms, or alkoxy, alkylcarbonyl, alkylcarbonyloxy, alkyloxycarbonyl, alkenyl, or phenyl or phenoxy which may be substituted by one or more of halogen, haloalkyl, cyano, nitro, and alkyl, alkoxy or alkoxythio of from one to four carbon atoms.

5. A method for controlling insects at a locus which comprises applying to said locus an effective amount of a compound of claim 1.

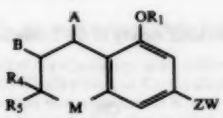
4,486,428

BICYCLIC BENZO FUSED COMPOUNDS

James F. Eggler, Stonington; Michael R. Johnson, Gales Ferry, and Lawrence S. Melvin, Jr., Ledyard, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 358,751, Mar. 16, 1982, abandoned. This application Jan. 13, 1983, Ser. No. 457,171
Int. Cl.³ A61K *31/35*; C07D *311/58*
U.S. Cl. 424—248.4 **14 Claims**

1. A compound of the formula



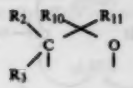
and pharmaceutically acceptable cationic and acid addition salts thereof;

wherein M is O, B is hydrogen and A is

wherein f is zero or 1, R_2 and R_3 are each hydrogen, methyl or ethyl; and Q is a member selected from the group consisting of CO_2R_7, COR_8, $C(OH)R_8R_9$, CN, $CONR_{12}R_{13}$, $CH_2NR_{12}R_{13}$, CH_2NHCOR_{14},

and 5-tetrazolyl;

A and OR_1 when taken together form



where R_{10} is hydrogen and R_{11} is hydroxy or alkoxy having from one to four carbon atoms or taken together R_{10} and R_{11} are an oxygen atom;

R_1 is a member selected from the group consisting of hydrogen, benzyl, benzoyl, alkanoyl having from one to five carbon atoms and $—CO—(CH_2)_p—NR_{15}R_{16}$ wherein p is 0 or an integer from 1 to 4; each of R_{15} and R_{16} when taken individually is selected from the group consisting of hydrogen and alkyl having from one to four carbon atoms; R_{15} and R_{16} when taken together with the nitrogen atom to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of piperidino, pyrrolo, pyrrolidino, morpholino and N-alkylpiperazino having from one to four carbon atoms in the alkyl group;

R_4 is hydrogen, alkyl having from 1 to 6 carbon atoms or $—(CH_2)_z—C_6H_5$ wherein z is an integer from 1 to 4;

R_5 is hydrogen, methyl or ethyl;

R_7 is hydrogen, alkyl having from one to four carbon atoms or benzyl;

R_8 and R_9 are each hydrogen, alkyl having from one to four carbon atoms, phenyl or benzyl;

when taken separately, R_{12} and R_{13} are each hydrogen, alkyl having from one to six carbon atoms, phenyl or benzyl; R_{12} and R_{13} when taken together with the nitrogen atom to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of piperidino, pyrrolidino, morpholino and N-alkylpiperazino having from one to four carbon atoms in the alkyl group;

R_{14} is a member selected from the group consisting of hydrogen, alkyl having from one to five carbon atoms, trifluoromethyl, benzyl, furyl, thienyl, pyridyl, or $R_{18}C_6H_4$ where R_{18} is H, NH_2, F, Cl, Br, CH_3, or OCH_3;

R_{17} is alkyl having from one to six carbon atoms, benzyl or $R_{18}C_6H_4$;

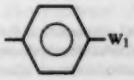
Z is selected from the group consisting of

(a) alkylene having from one to nine carbon atoms;

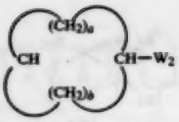
(b) $—(alk_1)_m—X—(alk_2)_n—$ wherein each of (alk_1) and (alk_2) is alkylene having from one to nine carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than nine; each of m and n is 0 or 1; X is selected from the group consisting of O, S,

and

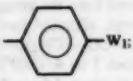
W is selected from the group consisting of hydrogen, methyl, pyridyl, piperidyl,



wherein W_1 is selected from the group consisting of hydrogen, fluoro and chloro; and



wherein W_2 is selected from the group consisting of hydrogen and



a is an integer from 1 to 5 and b is 0 or an integer from 1 to 5; with the proviso that the sum of a and b is not greater than 5 and the further proviso that when Z is $-(alk_1)X$, W is other than hydrogen.

11. A method for producing analgesia in a mammalian subject which comprises administering to said subject an analgesia producing amount of a compound according to claim **1**.

13. A method for prevention and treatment of nausea in a mammal subject to said nausea which comprises orally or parenterally administering to said mammal a compound according to claim **1** in an amount effective to prevent nausea.

4,486,429

AMINO DERIVATIVES OF 4-PHENYL 4-OXOBUTEN-2-OIC ACID, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM, AND METHODS FOR PREPARING AND THERAPEUTICALLY USING THEM

Mario Bianchi, and Fernando Barzaghi, both of Milan, Italy, assignors to Roussel Uclaf, Romainville, France

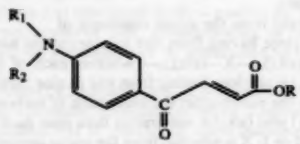
Filed Oct. 20, 1982, Ser. No. 435,371

Claims priority, application Italy, Oct. 22, 1981, 49549 A/81

Int. Cl.[3] **A01N** *43/84, 43/48;* **C07D** *265/30, 295/02, 413/00, 241/02*

U.S. Cl. 424—248.5 **26 Claims**

1. A compound of formula I:



in which R represents a hydrogen atom or an alkyl radical containing from 1 to 8 carbon atoms and R_1 and R_2 independently represent a hydrogen atom, an alkyl radical containing from 1 to 4 carbon atoms, a $-CONH_2$ radical, $-CO_2alk_1$ radical in which alk_1 represents an alkyl radical containing from 2 to 8 carbon atoms, or an $-SO_2alk_2$ radical in which alk_2 represents an alkyl radical containing from 1 to 8 carbon atoms or R_1 and R_2 together with the nitrogen atom form a heterocycle selected from the group consisting of morpholine and N-methyl piperazine, provided that R_1 and R_2 are not both hydrogen, as well as the pharmaceutically acceptable alkali metal, alkaline earth metal, ammonium or amine salts of the said compounds of formula I when R represents a hydrogen atom.

12. A pharmaceutical composition for treating hyperchlorhydria, gastric or gastroduodenal ulcers, gastritis, hiatal hernias, or gastric or gastroduodenal ailments accompanied by gastric hyperacidity, comprising a therapeutically effective amount of a compound of formula (I) as defined in claim **1** and a pharmaceutically acceptable excipient.

4,486,430

METHOD OF TREATING ARTHRITIC DISEASE

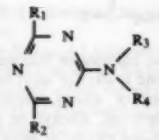
Andrew S. Tomcufcik, Old Tappan, N.J., and Adolph E. Sloboda, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 17,796, Mar. 5, 1979, Pat. No. 4,261,892, which is a continuation-in-part of Ser. No. 895,572, Apr. 12, 1978, abandoned. This application Mar. 27, 1980, Ser. No. 134,593

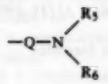
Int. Cl.[3] **A61K** *31/53*

U.S. Cl. 424—249 **3 Claims**

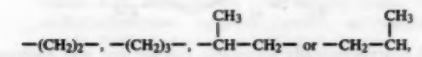
1. The method of inhibiting the progression of arthritis in a mammal which comprises administering to said mammal an effective amount of a compound selected from the group consisting of those of the formula:



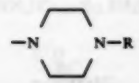
wherein R_1 is alkylamino having from 4 to 8 carbon atoms, inclusive, 1-adamantylamino, 2-adamantylamino,exo[2.2.1]norbornylamino or endo[2.2.1]norbornylamino; R_2 is 1-adamantylamino, 2-adamantylamino, exo[2.2.1]norbornylamino or endo[2.2.1]norbornylamino; R_3 is hydrogen or alkyl having from 1 to 4 carbon atoms, inclusive; R_4 is 2-(2-pyridyl)ethyl, alkyl having from 4 to 8 carbon atoms, inclusive, phenyl, monohalo(F, Cl, Br)phenyl, 1-adamantyl, 2-adamantyl, exo[2.2.1]norbornyl,endo[2.2.1]norbornyl or a monovalent moiety of the formula:



wherein Q is a divalent moiety of the formulae:



R_5 is alkyl having up to 4 carbon atoms, R_6 is alkyl having up to 4 carbon atoms, and R_5 and R_6 taken together with their associated N(itrogen) is piperidino, morpholino, pyrrolidino or thiomorpholino with the proviso that when R_4 is alkyl adamantyl or norbornyl then R_3 must be hydrogen; and R_3 and R_4 taken together with their associated N(itrogen) is pyrrolidino, piperidino, hexamethyleneimino, heptamethyleneimino or a monovalent moiety of the formula:



wherein R is hydrogen, alkyl having up to 4 carbon atoms, phenyl, p-methoxyphenyl or carboalkoxy having up to 4 carbon atoms; and the non-toxic acid-addition and quaternary ammonium salts thereof.

4,486,431

CARDIOTONIC USE OF 4,5-DIHYDRO-6-(4-PYRIDINYL)-3(2H)-PYRIDAZINONES

George Y. Lesher, Schodack, and William B. Dickinson, Albany, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 225,024, Jan. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 71,064, Aug. 30, 1979, Pat. No. 4,298,609. This application Mar. 18, 1981, Ser. No. 245,086

The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.

Int. Cl.³ A61K *31/50*

U.S. Cl. 424—250 3 Claims

1. The method for increasing cardiac contractility in a patient requiring such treatment which comprises administering orally or parenterally in a solid or liquid dosage form to such patient a medicament comprising a pharmaceutically-acceptable carrier and, as the active component thereof, a cardiotonically-effective amount of 4,5-dihydro-R-6-(4-pyridinyl)-3(2H)-pyridazinone or pharmaceutically-acceptable acid-addition salt thereof, where R is hydrogen or methyl.

4,486,432

QUINOXALINEDIONE LEUKOTRIENE RELEASE INHIBITORS

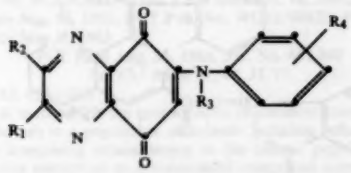
Winston S. Marshall, Bargersville; Jerome H. Fleisch, Indianapolis, and George J. Cullinan, Trafalger, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 30, 1982, Ser. No. 430,896

Int. Cl.³ C07D *241/42;* A61K *31/495*

U.S. Cl. 424—250 12 Claims

1. A compound of Formula I



I

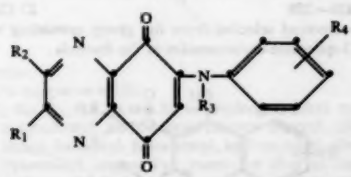
wherein

R_1, R_2 and R_3, are each independently hydrogen or C_1–C_6 alkyl; and

R_4 is C_1–C_6 alkyl, C_1–C_6 alkoxy, halo, trifluoromethyl, nitro, hydroxy, C_1–C_3 alkylthio, or C_1–C_3 alkylcarbonyl,

with the provision that when one of R_1 and R_2 is methyl and the other of R_1 and R_2 is methyl or ethyl, and R_3 is hydrogen, R_4 is not halo or C_1–C_2 alkyl.

4. A method of treating a mammal suffering from or susceptible to any condition characterized by an excessive release of leukotrienes, which comprises administering to said mammal a therapeutically effective amount of a compound of formula II



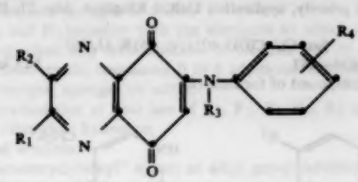
II

wherein

R_1, R_2, and R_3 are each independently hydrogen or C_1–C_6 alkyl; and

R_4 is C_1–C_6 alkyl, C_1–C_6 alkoxy, halo, trifluoromethyl, nitro, hydroxy, C_1–C_3 alkylthio, or C_1–C_3 alkylcarbonyl.

7. A method of treating a mammal suffering from or susceptible to an immediate hypersensitivity reaction of the type represented by asthma, which comprises administering to said mammal a therapeutically effective amount of a compound of formula II



II

wherein

R_1, R_2, and R_3 are each independently hydrogen or C_1–C_6 alkyl; and

R_4 is C_1–C_6 alkyl, C_1–C_6 alkoxy, halo, trifluoromethyl, nitro, hydroxy, C_1–C_3 alkylthio, or C_1–C_3 alkylcarbonyl.

4,486,433

FUSED-RING AMINO-PYRAZINES AS BRADYCARDIACS

Rudolf Hurnaus; Gerhart Griss, both of Biberach; Robert Sauter, Laupheim; Wolfgang Greil, Biberach, all of Fed. Rep. of Germany; Walter Kobinger, and Ludwig Pichler, both of Vienna, Austria, assignors to Dr. Karl Thomae Gesellschaft mit beschränkter Haftung, Biberach, Fed. Rep. of Germany

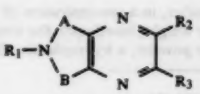
Division of Ser. No. 297,024, Aug. 27, 1981, Pat. No. 4,409,220. This application Jun. 6, 1983, Ser. No. 501,437

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1980, 3032994

Int. Cl.³ C07D *471/04, 487/04;* A61K *31/495, 31/55*

U.S. Cl. 424—250 8 Claims

1. A compound of the formula



wherein

A and B are each ethylene or (alkyl of 1 to 3 carbon atoms)-ethylene;

R_1 is hydrogen, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, alkenyl of 3 to 6 carbon atoms, phenyl-(alkyl of 1 to 3 carbon atoms), halophenyl-(alkyl of 1 to 3 carbon atoms), alkanoyl of 1 to 3 carbon atoms, phenyl-(alkanoyl of 1 to 3 carbon atoms), halophenyl-(alkanoyl of 1 to 3 carbon atoms), alkoxycarbonyl of 2 to 4 carbon atoms, aralkoxycarbonyl of 8 to 10 carbon atoms or phenyl;

one of R_2 and R_3 is amino and the other is hydrogen, chlorine, bromine, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, alkoxycarbonyl of 2 to 4 carbon atoms, phenyl or halophenyl;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

7. A bradycardiac pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective bradycardiac amount of a compound of claim 1.

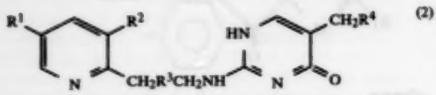
4,486,434

HISTAMINE H_1-ANTAGONISTS

George S. Sach, Welwyn, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Jun. 22, 1982, Ser. No. 391,076
Claims priority, application United Kingdom, Jun. 27, 1981, 8119906
Int. Cl.³ C07D 401/14; A61K 31/505
U.S. Cl. 424—251 12 Claims

1. A compound of formula (2):



(2)

or a pharmaceutically acceptable salt thereof; where R^1 is halogen or nitro; R^2 is C_{1-4} alkyl; R^3 is a C_{1-3} alkylene group; and R^4 is 3-pyridyl; N-oxo-3-pyridyl; 6-methyl-3-pyridyl; N-oxo-6-methyl-3-pyridyl; 6-hydroxymethyl-3-pyridyl; 4,6-dimethyl-3-pyridyl; N-oxo-4,6-dimethyl-3-pyridyl; 6-hydroxymethyl-4-methyl-3-pyridyl; 5,6-dimethyl-3-pyridyl; N-oxo-5,6-dimethyl-3-pyridyl; 6-hydroxymethyl-5-methyl-3-pyridyl; 4-pyridyl or N-oxo-4-pyridyl.

4,486,435

SPRAY-DRIED VITAMIN POWDERS USING HYDROPHOBIC SILICA

Douglass N. Schmidt, Grosse Ile; Jeffrey L. Finnan, Southgate, and Rudolph E. Lisa, Grosse Ile, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed May 16, 1983, Ser. No. 494,990
Int. Cl.³ A61K 31/525, 47/00, 31/595, 31/365
U.S. Cl. 424—252 10 Claims

1. In a process for preparing coated, non-agglomerated, spray-dried vitamin powders suitable for the preparation of tablets by direct compression comprising:

A. spraying into a spray-dryer chamber droplets of a composition containing a vitamin present as a dispersion, solution, or as an emulsion in an aqueous medium containing an encapsulating agent and wherein a water-insoluble carrier is optionally present in said aqueous medium, to produce a spray-dried powder which is dried in the presence of a dry particulate absorbent material, the improvement comprising:

B. metering into said chamber, in a concentration of about 0.2 to about 2 percent by weight, based upon the weight of said spray-dried vitamin powder, a hydrophobic silica.

4,486,436

ANALGESIC AND ANTI-INFLAMMATORY COMPOSITIONS COMPRISING CAFFEINE AND METHODS OF USING SAME

Abraham Sunshine, New York; Eugene M. Laska, Larchmont, and Carole E. Siegel, Mamaroneck, all of N.Y., assignors to Analgesic Associates, Larchmont, N.Y.

Continuation of Ser. No. 400,597, Jul. 22, 1982, abandoned. This application Mar. 11, 1983, Ser. No. 474,358
Int. Cl.³ A61K 31/19, 31/22, 31/44, 31/46, 31/52, 31/135, 31/485
U.S. Cl. 424—253 36 Claims

1. A pharmaceutical composition of matter for use in eliciting an onset hastened or enhanced analgesic or anti-inflammatory response in a mammal, said composition comprising:

(a) an analgesically and anti-inflammatorily effective amount of a non-steroidal anti-inflammatory drug comprising a propionic acid derivative or pharmaceutically acceptable salt thereof selected from benoxaprofen, flurbiprofen, fenbufen, ketoprofen, pirprofen, carprofen, oxaprozin, pranoprofen, miroprofen, tioxaprofen, suprofen, alminoprofen, tiaprofenic acid, fluprofen or bucloxic acid; and

(b) an amount of caffeine sufficient to hasten the onset of and enhance the analgesic or anti-inflammatory response.

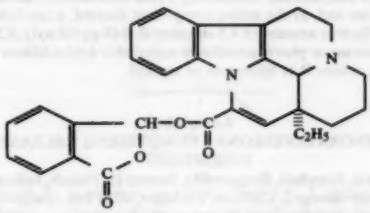
4,486,437

PHTHALIDYL APOVINCAMINATE WITH CEREBRAL EUBOLIC ACTIVITY

Leonardo De Vincentiis, Rome, Italy, assignor to Ausonia Farmaceutici s.r.l., Pomezia, Italy

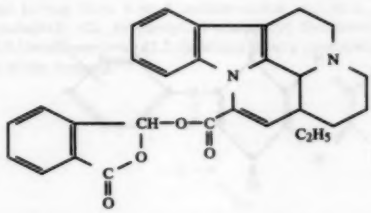
Filed Oct. 25, 1982, Ser. No. 436,289
Int. Cl.³ A61K 31/435; C07C 461/00
U.S. Cl. 424—256 2 Claims

1. The compound, 13a-ethyl-2,3,5,6,13a,13b-hexahydro-1H-indolo(3,2,1-de)pyrido(3,2,1-ij)(1,5)naphthyridin-12-phthalidine carboxylate, having the formula



(I)

2. Pharmaceutical compositions in unit dosage form, possessing cerebral eubolic activity, containing the compound



(I)

as the active principle in an amount of 5–15 mgs per unit or in the form of a 1–5% solution.

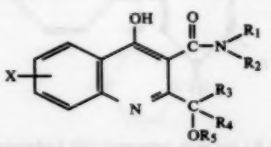
4,486,438

4-HYDROXY-3-QUINOLINE-CARBOXYLIC ACID DERIVATIVES

Francois Clemence; Odile Le Martret, both of Paris, and Francoise Delevallee, Vincennes, all of France, assignors to Roussel Uclaf, Paris, France

Filed May 27, 1983, Ser. No. 498,832
Claims priority, application France, Jun. 3, 1982, 82 09654
Int. Cl.³ A61K 31/47; C07D 215/36
U.S. Cl. 424—258 27 Claims

1. A compound selected from the group consisting of 4-hydroxy-3-quinoline-carboxamides of the formula



I

wherein X is in the 5,6,7 or 8-position and is selected from the group consisting of hydrogen, halogen, alkyl of 1 to 5 carbon atoms, alkoxy of 1 to 4 carbon atoms, $—CF_3$, $—OCF_3$ and

—SCF_3, R_1 is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, R_2 is selected from the group consisting of thiazolyl, 4,5-dihydro-thiazolyl, pyridinyl, oxazolyl, isoxazolyl, imidazolyl, pyrimidinyl and tetrazolyl, all optionally substituted with alkyl of 1 to 4 carbon atoms and phenyl optionally substituted with at least one member of the group consisting of —OH, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, $-CF_3$, $-NO_2$ and halogen, R_3 is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and phenyl or naphthyl, R_4 is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and phenyl or naphthyl, R_5 is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and

R_5' is selected from the group consisting of alkyl of 1 to 4 carbon atoms and phenyl and their non-toxic, pharmaceutically acceptable acid addition salts and salts with non-toxic, pharmaceutically acceptable bases.

10. An analgesic and anti-inflammatory composition comprising an analgesically and anti-inflammatorily effective amount of of at least one compound of claim 1 and a pharmaceutical carrier.

4,486,439

TREATMENT OF COCCIDIOSIS

William L. Studt, Harleysville; Donald E. Kuhla, Doylestown; Billy J. Chou, Paoli, and John Yelnosky, Warrington, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

PCT No. PCT/US81/01142, § 371 Date Sep. 16, 1982, § 102(e) Date Sep. 16, 1982, PCT Pub. No. WO83/00625, PCT Pub. Date Mar. 3, 1983

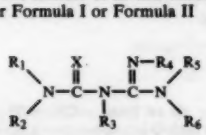
PCT Filed Aug. 24, 1981, Ser. No. 451,168

Int. Cl.³ A61K *31/44, 31/17*

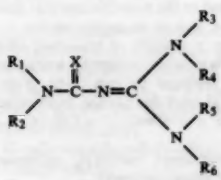
U.S. Cl. 424—263 **41 Claims**

1. A method for the prophylactic or curative treatment of coccidiosis in a population of animals including infected animals comprising administering to the animal population an effective amount of an anti-coccidial compound according to either Formula I or Formula II

Formula I



Formula II



wherein:

X is oxygen or sulfur;

R_1, R_2, R_3, R_4, R_5 and R_6 are hydrogen, alkyl, cycloalkyl, cycloalkenyl, bicycloalkyl, alkenyl, alkynyl, alkoxy, hydroxy, haloalkyl, haloalkenyl, hydroxyalkyl, alkoxyalkyl, cyanoalkyl, aminoalkyl, mono- or di-alkyl aminoalkyl, carbamoylylalkyl, mono- or di-alkyl carbamoyl lower alkyl, alkoxy carbamoylalkyl, aralkoxy carbamoylalkyl, acyl, alkylsulfonyl, aralkylsulfonyl, aryl, aralkyl, heterocyclyl, substituted heterocyclyl, heterocyclylalkyl or substituted heterocyclylalkyl;

R_1 and R_2 together with the nitrogen to which they are attached may form a mono- or bicyclic 5 to 10 member heterocycle containing 0 to 4 additional heteroatoms of oxygen, nitrogen or sulfur;

R_5 and R_6 together with the nitrogen to which they are attached may form a mono- or bicyclic 5 to 10 member heterocycle, containing 0 to 4 additional heteroatoms of oxygen, nitrogen or sulfur;

R_4 and R_5 together with the nitrogens to which they are attached may form a mono- or bicyclic 5 to 10 member heterocycle, containing 0 to 4 additional heteroatoms of oxygen, nitrogen or sulfur;

provided that at least one of R_1, R_2, R_3, R_4, R_5 and R_6 is other than hydrogen;

and wherein:

"heterocyclylalkyl" means an alkyl group substituted by a heterocyclyl group;

"heterocyclyl" and "heterocycle" means a 3, 5, 6, 7, 8, 9 or 10 member ring having 1 to 5 hetero atoms which may be nitrogen, oxygen or sulfur, including morpholinyl, thiazolidinyl, piperazinyl, thiamorpholinyl, trimethylenetriaminyl, ethyleneiminyl, 1-pyrrole, 2-pyrrole, 3-pyrrole, 2-furan, 3-furan, 2-thiophene, 3-thiophene, 2-tetrahydrothiophene, 3-tetrahydrothiophene, 1-imidazole, 2-imidazole, 4-imidazole, 5-imidazole, 2-oxazole, 4-oxazole, 5-oxazole, 2-thiazole, 4-thiazole, 5-thiazole, 1-pyrazole, 3-pyrazole, 4-pyrazole, 5-pyrazole, 1-pyrrolidine, 2-pyrrolidine, 3-pyrrolidine, 1-(3-pyrroline), 2-(3-pyrroline), 3-(3-pyrroline), 2-pyridyl, 3-pyridyl, 4-pyridyl, 2-pyrimidine, 4-pyrimidine, 5-pyrimidine, 6-pyrimidine, 2-purine, 6-purine, 8-purine, 9-purine, 2-quinoline, 3-quinoline, 4-quinoline, 5-quinoline, 6-quinoline, 7-quinoline, 8-quinoline, 1-isoquinoline, 3-isoquinoline, 4-isoquinoline, 5-isoquinoline, 6-isoquinoline, 7-isoquinoline, 8-isoquinoline, or carbazole; and

"substituted heterocyclyl" and "substituted heterocycle" means a heterocyclyl or heterocycle which is mono-, di-, tri- or tetrasubstited by lower alkyl, lower alkenyl, lower alkynyl, aryl, aralkyl, halo, nitro, cyano, sulfonyl, hydroxyl, carboxyl, lower alkanoyl, lower carboalkoxy, loweralkoxy, aryloweralkoxy, haloloweralkoxy, amido, amino, loweralkylamino, dialkylamino, loweralkoxyamino, and aralkylamino;

and, pharmaceutically acceptable salts thereof.

4,486,440

RETINOPROTECTOR FOR TREATING INTRAOCULAR HEMORRHAGE, MYOPIC, CHORIORETINAL DYSTROPHIES, CONGENITAL RETINAL DYSTROPHIES, RETINAL BURNS AND PREVENTION OF INJURY IN LASERCOAGULATION

Nikolai M. Emanuel; Anna A. Shvedova; Leonid D. Smirnov; Larisa V. Spirina, and Lev A. Katsnelson, all of Moscow, U.S.S.R., assignors to Institut Khimicheskoi Fiziki; Institut Glaznykh Boleznei Imeni Gelmgoltza and Vsesojuzny Nauchno-Issledovatelsky Khimiko-Farmatsevticheskiy Institut, all of Moscow, U.S.S.R.

Filed Aug. 17, 1983, Ser. No. 523,954

Int. Cl.³ A61K *31/44*

U.S. Cl. 424—263 **6 Claims**

1. A retinoprotector for treating intraocular hemmorrhage, myopic chorioretinal dystrophies, congential retinal dystrophies and retinal burns and prevention of injury in lasercoagulation comprising a retinoprotective effective amount of 2-ethyl-6-methyl-3-hydroxypyridine hydrochloride and a pharmaceutical vehicle.

4,486,441

PSEUDOTROPYL HALOGENO-BENZOATES AND THEIR USE IN MIGRAINE TREATMENT

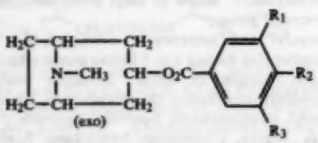
John R. Fozard, Strasbourg-Elsau, and Maurice W. Gittos, Illkirch-Graffenstaden, both of France, assignors to Merrell Toraude Et Compagnie, Strasbourg, France

Filed Dec. 8, 1982, Ser. No. 447,855

Int. Cl.³ C07D 451/12; A61K 31/46

U.S. Cl. 424—265 **7 Claims**

1. A method of treating migraine which comprises administering to a patient suffering migraine, an effective migraine-relieving amount of a pseudotropyl benzoate derivative having the formula:



wherein:

R_1 represents halogen;

R_2 represents hydrogen or halogen; and

R_3 represents hydrogen or halogen provided that R_3 is hydrogen when R_2 is hydrogen or a pharmaceutically acceptable salt thereof.

4,486,442

ANTI-ALLERGY BICYCLIC PHENOL ETHERS

Walter-Gunar Friebe, Darmstadt; Wolfgang Kampe, Heddesheim; Androniki Roesch nee Apostolides, Mannheim, and Wolfgang Schaumann, Heidelberg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

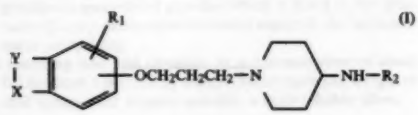
Filed Feb. 25, 1983, Ser. No. 469,856

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1982, 3209271

Int. Cl.³ A61K 31/445; C07D 401/12, 405/12, 409/12

U.S. Cl. 424—267 **30 Claims**

1. A bicyclic phenol ether of the formula:



(I)

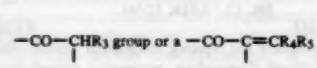
wherein

R_1 is a hydrogen atom or C_1–C_6 alkyl,

R_2 is a hydrogen atom; an acyl residue of a saturated or unsaturated C_1–C_6 aliphatic carboxylic acid which is unsubstituted or substituted one time by phenyl or phenyl substituted one time by halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, amino or nitro; an acyl residue of a C_4–C_8 carbocyclic carboxylic acid, phenyl carboxylic acid or phenyl carboxylic acid substituted one time by halogen, hydroxyl, C_1–C_6 alkyl, C_1–C_6 alkoxy, nitro, amino, C_1–C_6 alkylthio, C_1–C_6 alkylsulphinyl, C_1–C_6 alkylsulphonyl or cyano;

X is an oxygen or sulphur atom or a —NH— group;

Y is a



group;

R_3 is a hydrogen atom; a C_3–C_7 cycloalkyl radical; or C_1–C_6 alkyl which is unsubstituted or substituted one time by phenyl or phenyl substituted one time by halogen, C_1–C_6 alkyl or C_1–C_6 alkoxy; and

R_4 and R_5, which are the same or different, are hydrogen; C_1–C_6 alkyl; a straight-chained, branched or cyclic C_2–C_{16} alkenyl with 1 to 3 double bonds in the alkenyl moiety which is unsubstituted or substituted one time by phenyl or phenyl substituted one time by halogen, C_1–C_6 alkyl or C_1–C_6 alkoxy; or phenyl, or

R_4 and R_5, together with the carbon atom to which they are attached, form a C_3–C_7 cycloalkyl ring; or a pharmacologically acceptable salt thereof.

29. A method of combating an allergic response in a patient which comprises administering to such a patient an anti-allergically effective amount of a compound or salt according to claim 1.

4,486,443

HYDANTOIN DERIVATIVES AND PHARMACEUTICAL USE

Albert G. Caldwell, West Wickham, and Norman Whittaker, Beckenham, both of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

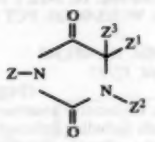
Division of Ser. No. 911,265, May 31, 1978, Pat. No. 4,262,128, which is a continuation-in-part of Ser. No. 802,644, Jun. 2, 1977, Pat. No. 4,204,068. This application Mar. 10, 1980, Ser. No. 129,273

Claims priority, application United Kingdom, Jun. 3, 1976, 22877/76; Dec. 2, 1976, 50340/76; Mar. 23, 1977, 12145/77; Jun. 1, 1977, 23071/77

Int. Cl.³ A61K 31/415; C07D 233/76

U.S. Cl. 424—273 R **60 Claims**

1. A compound of formula (I):



(I)

Z and Z^3 are hydrogen;

one of Z^1 and Z^2 is a group

$$—CH_2—X—X^1—X^2$$

wherein

X is phenylene, —C≡C—, cis or trans —CH=CH— or —CH_2—CQ_2— in which each Q is independently selected from hydrogen and alkyl or the two Q's together form an alkylene radical of four, five or six carbon atoms;

X^1 is a covalent bond or a straight or branched alkylene chain having 1 to 6 carbon atoms optionally having one of its methylene groups replaced by oxa (—O—) or thia (—S—) provided that at least one carbon atom separates the oxa or thia from a —C≡C—, —CH=CH— or —CO— group; and

X^2 is selected from 5-tetrazolyl, carboxyl, carboxamide, hydroxymethylene and alkoxycarbonyl;

and the other of Z^1 and Z^2 is a group

$$—Y—Y^1—Y^2—Y^3$$

wherein

Y is —CR_2—CH_2— in which each R is independently selected from hydrogen and methyl;

Y^1 is carbonyl, methylene, methylene substituted by hydroxyl or methylene substituted by hydroxyl and alkyl;

Y^2 is a covalent bond or straight or branched alkylene having 1 to 7 carbon atoms optionally substituted in the carbon adjacent Y^1 by one or two groups each of which may be alkyl or a cyclic radical;

Y^3 is hydrogen, hydroxy, alkoxy of 1 to 7 carbon atoms, a

cyclic radical, phenyl, benzyl, phenoxy or benzyloxy, wherein each of phenyl, benzyl, phenoxy and benzyloxy may be substituted in the benzene ring by one or more groups selected from hydroxy, halogeno, nitro, amino, acylamino, alkenyl, alkoxy, phenyl and alkyl which may itself be substituted by one or more halogeno groups; or Y^2 and Y^3 together form an alkyl group of 1 to 7 carbon atoms having at least one hydrogen replaced by fluoro;

or Y is a bond, $—CH_2—$ or $—CH_2.CH_2—$ and Y^1, Y^2 and Y^3 taken together form a cycloalkyl or bicycloalkyl group substituted by a hydroxyl group; and salts thereof:

the term cyclic radical means the monovalent radical derived by loss of a ring hydrogen atom from a monocyclic or polycyclic compound having from 3 to 12 ring atoms selected from carbon, nitrogen, oxygen and sulphur, which compound may be saturated or unsaturated and may be further substituted by one or more alkyl groups, but excluding phenyl, and optionally one or more hydrogen atom of such radicals being replaced by fluoro.

4,486,444

(HYDROXYBENZOYL)THIOPHENESULFONAMIDE AND ACYL DERIVATIVES THEREOF FOR THE TOPICAL TREATMENT OF ELEVATED INTRAOCULAR PRESSURE

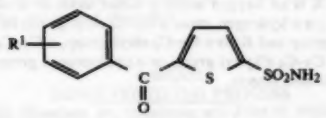
Kenneth L. Shepard, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 20, 1983, Ser. No. 505,604

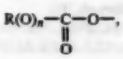
Int. Cl.³ A61K *31/38, 31/435;* **C07D** *333/16, 211/68*

U.S. Cl. 424—275 **13 Claims**

1. A compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein R^1 is HO— or



wherein

n is 0 or 1;

R is

(1) C_{1-18}alkyl, either straight or branched chain,

(2) C_{1-18}haloalkyl, wherein halo is chloro, bromo, or fluoro,

(3) $R^1R^2N—C_{1-5}$alkyl, wherein R^1 and R^2 are independently hydrogen or C_{1-3}alkyl, or R^1 and R^2 are joined together to form a heterocycle selected from piperidinyl, morpholinyl, or pyrrolidinyl,

(4) C_{1-3}alkoxycarbonyl-C_{1-5}alkyl,

(5) C_{3-6}cycloalkyl,

(6) C_{3-6}cycloalkyl-C_{1-3}alkyl,

(7) C_{1-3}alkyl-C_{3-6}cycloalkyl,

(8) aryl, wherein aryl is a carbocycle or heterocycle selcted from phenyl, naphthyl, pyridinyl, furanyl or thienyl, either unsubstituted or substituted with one or more of C_{1-3}alkyl, halo or C_{1-3}alkoxy,

(9) aryl-C_{1-3}alkyl, either unsubstituted or substituted with one or more of halo, C_{1-3}alkyl or C_{1-3}alkoxy,

(10) C_{2-6}alkenyl,

(11) C_{2-6}alkynyl,

(12) aryl-C_{2-6}alkenyl,

(13) NR^3-piperidinyl, wherein R^3 is C_{1-3}alkyl or C_{2-5}alkanoyl, or

(14) C_{1-3}alkoxy-C_{1-5} alkyl.

4,486,445

JUSTICIDIN INSECTICIDAL AND ANTIVIRAL COMPOUNDS

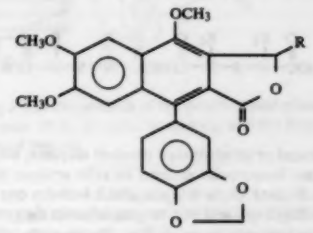
Narayan G. Patel, and Chia-Lin J. Wang, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 12, 1983, Ser. No. 457,372

Int. Cl.³ C07D *407/02;* **A61K** *31/34*

U.S. Cl. 424—279 **30 Claims**

1. A compound having the formula



wherein

R is —F, $—OOCCH_3$, $—OR^1$, or $—SR^1$; where R^1 is —H or an alkyl group of 1 to 12 carbon atoms, provided that when R is $—OCH_3$, the compound is a synthetic product, or a purified component of a fraction or extract isolated from natural sources such as crude extracts of *Justicia extensa.*

4,486,446

ARALKYLAMINOETHANOL HETEROCYCLIC COMPOUNDS

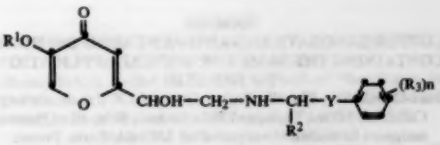
John J. Baldwin, Gwynedd Valley, and David E. McClure, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 23, 1980, Ser. No. 219,764

Int. Cl.³ A61K *31/35*

U.S. Cl. 424—283 **8 Claims**

1. A pharmaceutical composition for (a) reducing intraocular pressure (b) treating hypertension or (c) effecting bronchodilation containing an effective amount of a compound of the formula:



racemates, diastereomers, individual isomers, tautomers, and pharmaceutically acceptable salts thereof, wherein

R^1 is CH_3 or CH_2-phenyl

R^2 is H or C_1–C_3alkyl,

Y is CH_2, $(CH_2)_2$ or CH_2O,

R_3 is H, C_1–C_3alkyl, halogen, OH or OCH_3 and

n is 1 or 2

and a carrier.

4,486,447

PESTICIDAL SYMMETRICAL BIS-SULFENYLATED-BIS CARBAMATE COMPOUNDS

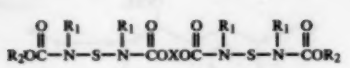
Themistocles D. J. D'Silva, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 903,533, May 8, 1978, Pat. No. 4,400,389. This application Jun. 24, 1983, Ser. No. 507,468

Int. Cl.³ C07C *125/06, 121/50, 121/60, 121/74, 125/04;* A01N *43/08, 47/10*

U.S. Cl. 424—285 9 Claims

1. A compound of the formula:

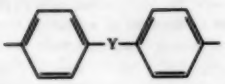


wherein:

X is:

A. a substituted or unsubstituted divalent alkylene, alkenylene, alkynylene, monocyclic arylene, bicyclic arylene, biphenylene or a divalent alkylene chain which includes one oxygen, sulfur, sulfinyl, sulfonyl or nitrogen, wherein the permissible substituents are one or more alkyl, fluoro, nitro, chloro, or bromo groups.

B. a divalent organic radical of the formula:



wherein:

Y is oxygen, sulfur, sulfinyl, sulfonyl, alkylene, haloalkylene, alkenylene, or haloalkenylene;

R_1 is alkyl having from one to four carbon atoms;

R_2 is:

A. dihydrobenzofuranyl, naphthyl, tetrahydronaphthyl, benzothienyl, indanyl, benzodioxalanyl, benzofuranyl, or benzodioxanyl, all of which may be either unsubstituted or substituted with one or more alkyl groups; or B. Phenyl, either unsubstituted or substituted with one or more halo, cyano, nitro, cycloalkyl, alkyl, 2-dioxalanyl, alkylthio, alkylsulfinyl, alkylsulfonyl, 2-dithiolanyl, alkylthioalkyl, alkylsulfonylalkyl, amino, alkylamino, dialkylamino, alkynyloxy, alkoxycarbonylamino, trihalomethyl, N,N-dialkylformamidino, alkoxy.

4,486,448

COPPER LANOLATE AND ANTI-ACNE COMPOSITIONS CONTAINING THE SAME FOR TOPICAL APPLICATION TO THE SKIN

Jean-Claude Ser, Chevilly Larue; Quang L. N'Guyen, Antony; Catherine Millet, Paris, and Béla Szarazi, Brie, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Oct. 14, 1982, Ser. No. 434,186

Claims priority, application France, Oct. 20, 1981, 81 19661

Int. Cl.³ A01N *55/02;* C07F *1/08;* A61K *31/30*

U.S. Cl. 424—294 19 Claims

1. Copper lanolate.

3. A anti-acne composition for application to the skin comprising, in a cosmetically acceptable vehicle or carrier, copper lanolate in an amount ranging from 0.2 to 50 weight percent based on the total weight of said composition.

4,486,449

THIOCARBAMATE COMPOUNDS, AND THEIR USE

Hirosi Kisida, Hyogo, and Makoto Hatakoshi, Osaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

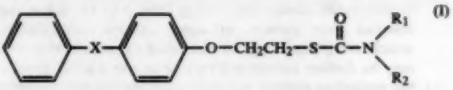
Filed Jul. 13, 1982, Ser. No. 397,894

Claims priority, application Japan, Jul. 31, 1981, 56-121229; Jan. 11, 1982, 57-3186; Feb. 16, 1982, 57-24079; Mar. 27, 1982, 57-49399

Int. Cl.³ C07C *155/02;* A01N *47/10*

U.S. Cl. 424—300 16 Claims

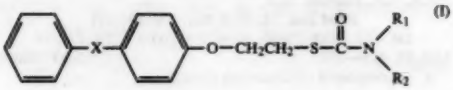
1. A thiolcarbamate compound of the formula:



(I)

wherein X is an oxygen atom, a sulfur atom or a methylene group, R_1 is a hydrogen atom, a C_1–C_4 alkyl group or a C_3–C_4 alkenyl group and R_2 is a C_1–C_4 alkyl group, a C_3–C_4 alkenyl group, a C_3–C_4 alkynyl group or a cyclopropyl group.

9. A method for controlling insects which comprises treating said insects with an insecticidally effective amount of at least one thiolcarbamate compound of the formula:



(I)

wherein X is an oxygen atom, a sulfur atom or a methylene group, R_1 is a hydrogen atom, a C_1–C_4 alkyl group or a C_3–C_4 alkenyl group and R_2 is a C_1–C_4 alkyl group, a C_3–C_4 alkenyl group, a C_3–C_4 alkynyl group or a cyclopropyl group for the control of said insects.

4,486,450

METHOD OF TREATING PSORIATIC SKIN AND COMPOSITION

Joel E. Bernstein, Deerfield, Ill., assignor to Dermalogical Enterprises, Ltd., Northbrook, Ill.

Filed Jul. 14, 1980, Ser. No. 167,312

Int. Cl.³ A61K *31/165*

U.S. Cl. 424—324 10 Claims

1. A method of treating psoriatic skin in human patients in need of such treatment comprising applying to the psoriatic skin a therapeutically effective amount of capsaicin.

4,486,451

ANIMAL FEED SUPPLEMENT

John H. Linton, and Nick Hussar, both of London, Canada, assignors to Ogilvie Mills Ltd., Montreal, Canada

Continuation-in-part of Ser. No. 222,029, Jan. 2, 1981, abandoned. This application Jun. 11, 1982, Ser. No. 387,476

Int. Cl.³ A23K *1/00*

U.S. Cl. 426—31 11 Claims

1. A process for producing a moist, cohesive, friable, readily transportable animal feed supplement from wet corn bran and corn steep liquor exiting a wet corn milling process consisting essentially of:

(a) mechanically de-watering the wet corn bran to a solids content of from 30% to 50% by weight;

(b) thoroughly admixing the de-watered bran with concentrated corn steep liquor having a solids content of from 40% to 55% by weight in a ratio of de-watered corn bran:concentrated corn steep liquor of from 3:1 to 1:2, the resulting mixture having a solids content of from 35% to 50% by weight; and

(c) compacting the resulting mixture to form a moist, cohe-

sive, friable, readily transportable mass having a bulk density of from 50 to 65 lb/cuft, a pH of less than 4.5 and a protein content of at least 20% on a dry matter basis said animal feed supplement having storage stability for a period of time from two weeks to seven months.

4,486,452

METHOD FOR MANUFACTURE OF CANDY

David A. Cloud; Charles E. Cloud, both of Wilmette; William N. Pearson, Highland Park, and Donn A. Hartman, Gurnee, all of Ill., assignors to Cloud Corporation, Skokie, Ill.

Division of Ser. No. 318,049, Nov. 4, 1981, Pat. No. 4,385,882, which is a division of Ser. No. 186,331, Sep. 9, 1980, Pat. No. 4,357,359. This application Sep. 13, 1982, Ser. No. 416,897

Int. Cl.³ A23G *3/00, 3/20, 3/24*

U.S. Cl. 426—306 **5 Claims**

1. A method of coating toffee candy cores comprising the steps of spacing and aligning the toffee candy cores one from another in spaced side-by-side rows and with the cores being spaced in each row, moving the spaced and aligned toffee candy cores through a first heated chocolate bath with the chocolate pooled beneath and about the cores, but leaving an uncoated stripe on a top surface of each toffee core for heated air to escape to prevent a slight build-up of air pressure inside the core which would otherwise tend to rupture the chocolate coating since the heated chocolate from the bath has a temperature in excess of an internal temperature in the core thus creating a pressure differential, then immersing the cores in a second chocolate bath positioned overhead of the candy cores for coating the uncoated stripe or ribbon surface on a top side of a core, and then directing an air stream at the cores for blowing away excess chocolate off of the cores and for smoothing the coated chocolate.

4,486,453

DESOLVENTIZING PROCESS

Lowen R. Morrison, Jr., Hamilton, and John H. Phillips, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 27, 1982, Ser. No. 453,090

Int. Cl.³ A23F *5/20*

U.S. Cl. 426—478 **20 Claims**

1. A method for removing residual ethyl acetate from decaffeinated coffee beans in about 3 to about 5 hours comprising:

(a) flash evaporating ethyl acetate from the decaffeinated coffee beans contained in from one to about 15 vessels by continuous application of a reduced pressure sufficient to lower the boiling point of the ethyl acetate and water mixture within the beans to below the temperature of the beans thereby causing the ethyl acetate and water to evaporate with ethyl acetate evaporating preferentially over the water;

(b) isolating the vessel from the low pressure source, increasing the pressure by flowing steam continuously or intermittently through the decaffeinated beans and retaining the steam within the vessel thereby causing the steam to condense on and within the beans; and

(c) repeating steps (a) and (b) in an alternating cycle.

4,486,454

PRE-SLITTER BLADE IN A PEACH PITTER AND METHOD

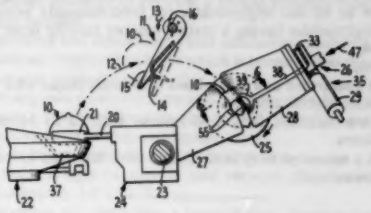
John C. Erb, Carson City, Nev., assignor to Filper Corporation, Reno, Nev.

Filed Sep. 2, 1981, Ser. No. 298,696

Int. Cl.³ A23N *4/04, 4/22*

U.S. Cl. 426—485 **8 Claims**

1. In a method of pitting peaches in which the flesh of the peach is cut in a plane substantially to the pit from opposite sides preparatory to the opposed halves of the peach being twisted loose from the pit, the step comprising:



cutting a kerf in the flesh of the peach in said plane at opposite ends of the pit prior to making said cut from opposite sides of the pit.

4,486,455

WATER-SOLUBLE SWEETENING TABLETS

Erich Wolf, Overath, and Rolf Deininger, Cologne, both of Fed. Rep. of Germany, assignors to Chimicasa GmbH, Chur, Switzerland

Filed Sep. 30, 1982, Ser. No. 431,071

Claims priority, application European Pat. Off., Aug. 31, 1982, 82108001.7

Int. Cl.³ A23L *1/236*

U.S. Cl. 426—548 **5 Claims**

1. A compressed water-soluble sweetening tablet containing, on a dry weight basis:

100 parts of L-aspartyl-L-phenylalanine methylester as a sweetening agent, having a granular size of 0.01 to 0.4 mm,

150 to 400 parts of glycine as a filler,

10 to 40 parts of a water-swellable jellifier selected from the group consisting of cross-linked sodium carboxymethylcellulose and cross-linked polyvinyl pyrrolidone as a solubility accelerator, and

0 to 4 parts of an auxiliary tabletting agent.

4,486,456

SODIUM-REDUCED BAKED DOUGH PRODUCTS AND METHOD

Jerome B. Thompson, P.O. Box 231 - Rte. 3, Cumberland, Md. 21502

Filed Sep. 19, 1983, Ser. No. 533,852

Int. Cl.³ A23D *2/00;* A23L *1/237*

U.S. Cl. 426—549 **9 Claims**

1. A salt-substitute composition for use in the production of baked dough products free of added sodium chloride comprising 1.0% to 2.50% of potassium chloride and 10% to 20% of a lactalbumin-containing compound.

4,486,457

MARGARINE FAT BLEND, AND A PROCESS FOR PRODUCING SAID FAT BLEND

Robert Schijf; August M. Trommelen, both of Vlaardingen, and Gabriël J. T. Lansbergen, 's-Gravenzande, all of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 9, 1983, Ser. No. 473,461

Claims priority, application United Kingdom, Mar. 12, 1982, 8207358

Int. Cl.³ A23D *3/02, 5/00*

U.S. Cl. 426—603 **25 Claims**

1. A margarine fat blend comprising:

70–96 wt. % of a liquid oil (i) which at 10° C. is substantially free from crystallized fat; and

4–30 wt. % of a fat (ii) in which 55–100 wt. % of the triglycerides consist of triglycerides (b) predominantly being

H_2M triglycerides having a carbon number ranging from 44 to 48, and 0-45 wt. % of the triglycerides consist of triglycerides (a) being HML, M_3, M_2H, M_2L, HL_2, ML_2 and L_3 triglycerides having a carbon number ranging from 34 to 42 and triglycerides (c) predominantly being H_3 triglycerides having a carbon number ranging from 50 to 54;

wherein

H is a saturated or a mono-trans fatty acid residue with 16 or more carbon atoms,

M is a saturated fatty acid residue with 12 to 14 carbon atoms,

L is a saturated fatty acid residue with less than 12 carbon atoms.

4,486,458

NON-GELLING CORN STEEP LIQUOR

Marion M. Bradford; Frank T. Orthoefer, and Kenneth N. Wright, all of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Division of Ser. No. 415,192, Sep. 7, 1982, Pat. No. 4,440,792. This application Nov. 16, 1983, Ser. No. 552,633

The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.

Int. Cl.³ A23K *1/14;* A23L *1/10*

U.S. Cl. 426—618 **10 Claims**

1. A non-gelling corn steep liquor composition which comprises:

(a) corn steep liquor; and

(b) an amount of a calcium complexing agent sufficient to prevent gelling of the corn steep liquor.

4,486,459

PROCESS FOR PREPARING CELLULOSE

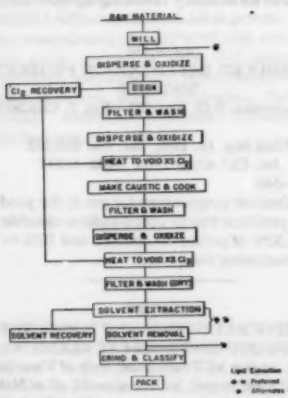
Jerome B. Thompson, Box 231 - Rte. 3, Cumberland, Md. 21502

Continuation-in-part of Ser. No. 97,348, Nov. 26, 1979, Pat. No. 4,307,121. This application Dec. 15, 1981, Ser. No. 330,957

The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.

Int. Cl.³ A23L *1/20*

U.S. Cl. 426—634 **8 Claims**



1. A process for the production of purified short fiber cellulose suitable for human consumption from the hulls of edible legumes comprising oxidizing the particulate, relatively non-ligneous legume hulls in a water slurry state with an oxidizing agent, heating the oxidized slurry for a time and at a temperature sufficient to solubulize the greater portion of the non-cellulose material present in the legume hulls, separating the formed pulp consisting predominantly of cellulose from the water slurry, redispersing the separated pulp in water to form a further slurry and thereafter oxidizing the further formed pulp slurry with an oxidizing agent, heating the pulp slurry to boiling to eliminate any excess oxidizing agent, and to solubulize any non-cellulose material present therein, adding a base material to the heated slurry to render same basic, cooking the basic slurry to digest any further non-cellulose material present therein, and separating the formed pulp as substantially pure short fiber cellulose suitable for human consumption.

4,486,460

COMPOSITION FOR LIVE FISHBAIT COATING

Dallas R. Kienast, and Patricia L. Kienast, both of 4458 Omro Rd., Oshkosh, Wis. 54901

Filed Jul. 25, 1983, Ser. No. 516,734

Int. Cl.³ A01G *5/06;* A23L *1/34*

U.S. Cl. 427—4 **6 Claims**

1. A coating for the external surface of live fishbait consisting of ground cornmeal and a coloring agent in powdered form whereby live fishbait may be coated externally with the composition without adversely affecting the life span or normal movement of the live fishbait.

4,486,461

METHOD AND APPARATUS FOR GAS PHASE TREATING SUBSTRATES

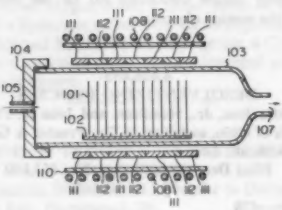
Takashi Ito, Kawasaki, and Ichiro Kato, Machida, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 16, 1983, Ser. No. 476,551

Claims priority, application Japan, Mar. 16, 1982, 57-042456

Int. Cl.³ B05D *3/06;* B05B *5/00*

U.S. Cl. 427—38 **13 Claims**



1. A method for gas phase treating a plurality of substrates, comprising:

(a) receiving a plurality of substrates in a reaction tube;

(b) feeding a reaction gas into the reaction tube;

(c) exciting the reaction gas to a plasma state by a means for supplying high frequency power; and

(d) heating a radiator, including a plurality of radiator elements, spaced apart from and surrounding the substrates by the high frequency power supply means, the radiator heating the substrates by radiation, the substrates being treated by the reaction gas in the plasma state.

4,486,462

METHOD FOR COATING BY GLOW DISCHARGE

Naotatsu Asahi, Katsuta; Shizuka Yamaguchi; Yoshitaka Kojima, both of Hitachi, and Katsuyoshi Terakado, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 12, 1982, Ser. No. 377,419

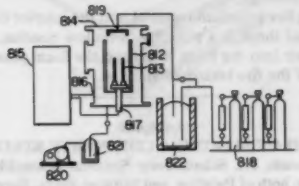
Claims priority, application Japan, May 13, 1981, 56-70819

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—39 **17 Claims**

1. A method for coating an electroconductive workpiece by glow discharge, which comprises reacting a gaseous compound of a metal species or a semi-metal species with another gaseous substance capable of forming a reaction product containing the metal or semi-metal species by reaction with said

gaseous compound, under a total pressure of not more than 10 Torr, the partial pressure of said gaseous compound being not more than that of said gaseous substance, said reacting being carried out by the glow discharge generated between an electroconductive workpiece connected to a cathode, at least one



secondary cathode positioned near enough to the workpiece to generate interactions of glow discharge between at least selected portions of the workpiece and the at least one secondary cathode, and an anode, thereby coating said at least selected portions of the workpiece with said reaction product.

4,486,463

SELECTIVE METAL PLATING ONTO POLY(PHENYLENE SULFIDE) SUBSTRATES

Michael F. Rubner, Chelmsford, and Peter Cukor, Natick, both of Mass., assignors to GTE Laboratories, Incorporated, Waltham, Mass.

Filed Dec. 21, 1983, Ser. No. 563,950
Int. Cl.³ C23C *3/02*
U.S. Cl. 427—53.1 **14 Claims**

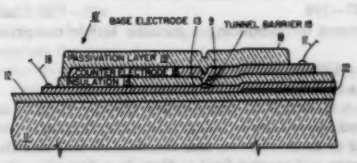
1. A method of selectively plating metal onto a poly(phenylene sulfide) substrate, comprising:
   a. creating a crystalline region and an amorphous region on said substrate;
   b. activating the surface of said substrate with an electroless plating catalyst for said metal;
   c. selectively introducing into the amorphous region of said substrate a dopant which inactivates the electroless plating catalyst; and
   d. contacting said substrate with an electroless plating solution containing metal ions to thereby selectively plate metal onto the crystalline region of said substrate.

4,486,464

METHOD OF MAKING PLANARIZING NON-CONDUCTIVE LAYERS EMPLOYING CONDUCTIVE METALS

Peter L. Young, North Wales, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Sep. 27, 1982, Ser. No. 424,923
Int. Cl.³ H01L *39/24*
U.S. Cl. 427—63 **10 Claims**



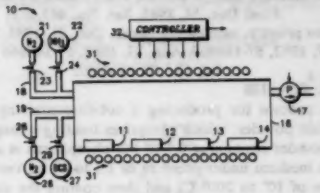
1. A method of making a planarized non-conductive pattern layer on a substrate, comprising:
   providing a thermally oxidized silicon substrate wafer,
   placing said substrate wafer in a vacuum chamber,
   producing a high vacuum in said vacuum chamber to approximately 1.0×10^{-6} torr,
   metering a predetermined amount of inert gas into said vacuum chamber to provide a higher pressure than said high vacuum,
   evaporating and depositing a first conductive metal on said substrate to provide a layer which is laterally non-conductive and vertically conductive,
   removing said substrate from said vacuum chamber,
   etching a predetermined pattern in said laterally non-conductive layer of first conductive metal,
   placing said substrate in a vacuum chamber,
   producing a high vacuum in said vacuum chamber to approximately 1.0×10^{-6} torr,
   evaporating and depositing a layer of high pressure durable conductive metal over said first conductive metal and said substrate to provide a layer of second conductive metal which is laterally non-conductive only where the second conductive layer is deposited over said first conductive layer.

4,486,465

METHOD FOR DEPOSITION ON A SEMICONDUCTOR WAFER

Bich-Yen Nguygen, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 30, 1983, Ser. No. 537,919
Int. Cl.³ H01L *21/316, 21/68*
U.S. Cl. 427—85 **8 Claims**



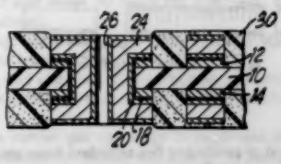
1. A method for using a metal boat coated with nitride, comprising the steps of:
   placing semiconductor wafers in the boat;
   placing the boat in a heated tube; and
   introducing silane, phosphine, and oxygen into said tube to deposit phosphosilicate glass on said wafers.

4,486,466

HIGH RESOLUTION SCREEN PRINTABLE RESISTS

Edward J. Leech, Oyster Bay, and Frank D. Russo, West Sayville, both of N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Continuation of Ser. No. 228,728, Jan. 27, 1981, abandoned, which is a division of Ser. No. 103,340, Dec. 13, 1979, abandoned, Continuation-in-part of Ser. No. 3,099, Jan. 12, 1979, abandoned. This application Jul. 29, 1982, Ser. No. 403,135
Int. Cl.³ H05K *3/28*
U.S. Cl. 427—96 **9 Claims**



1. A method for producing printed circuit boards which

includes the step of forming a pattern by printing a resinous mask onto the substrate and then heating the substrate to cure the mask, the improvement which comprises

using as the resin mask a composition comprising:

a thermosetting resin dissolved in a solvent, said thermosetting resin being a solid at room temperature, having a melting point between about 60° C. and about 200° C. and having a functionality greater than about 3 and sufficient to permit rapid cross-linking of said thermosetting resin into a solid without melting and liquifying of said thermosetting resin; and

a curing agent, said curing agent being present in an amount sufficient to effect substantially complete cure of said coating composition, said coating composition upon being cured transforming from a high viscosity solution into a solid, said coating composition having an apparent viscosity between about 10,000 centipoise and about 200,000 centipoise; and

heating said substrate at a temperature sufficient to evaporate said solvent and effect substantially complete cure of said thermosetting resin composition.

4,486,467

PROCESS FOR PRODUCING COBALT-CONTAINING MAGNETIC IRON OXIDE POWDER

Kazuo Nakata, Moriyama; Tsuneo Ishikawa, Kawanishi; Ichiro Honma; Arata Koyama, both of Moriyama; Masaharu Hirai, Shiga, and Masatoshi Amano, Moriyama, all of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Filed Dec. 14, 1982, Ser. No. 449,692

Claims priority, application Japan, Dec. 25, 1981, 56-211477; Aug. 27, 1982, 57-148965; Aug. 27, 1982, 57-148966

Int. Cl.³ C01G *49/02*

U.S. Cl. 427—129 **17 Claims**

1. A process for producing a cobalt-containing magnetic iron oxide powder, which comprises treating a magnetic iron oxide powder containing 0.1 to 1% phosphorus in an aqueous alkaline medium under pressure of 1.1 to 20 kg/cm^2 at a temperature of 10° to 200° C. and then coating the thus treated powder particles with a cobalt compound or a cobalt compound together with another metallic compound which is a ferrous, manganese, zinc, chromium or nickel compound, said cobalt containing magnetic iron oxide powder exhibiting a higher Hc than the cobalt containing magnetic iron oxide prepared as above absent said pressure treatment in the aqueous alkaline medium.

4,486,468

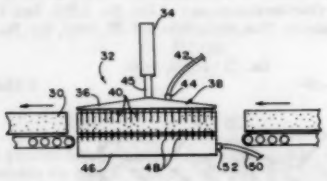
FIRE RETARDANT FOAM

Stanley D. Gray, Greensboro, N.C., assignor to Anti-Fire-Foam, Inc., Atlanta, Ga.

Filed Aug. 27, 1982, Ser. No. 412,441

Int. Cl.³ B05D *3/12, 5/00*

U.S. Cl. 427—181 **2 Claims**



1. A method of producing fire retardant foam material from already produced felxible foam which includes:

contacting said foam material with a dust or dry particulate atmosphere in which a fire retardant material selected from the group consisting of urea, sodium bicarbonate and ammonium sulfate is the particulate material;

compressing the foam material while said foam material is in contact with said particulate atmosphere;

releasing the compression on the foam so as to allow particulate material to be absorbed within the cell structure of the foam material;

injecting fire retardant material into the interior of the foam material through a plurality of hollow needles; and

passing air into the foam to expand the foam prior to injection of the fire retardant material.

4,486,469

METHOD OF MAKING A COMPOSITE STRUCTURE

John Machonis, Jr., Schaumburg; Seymour Schmukler; Robert J. Zeitlin, both of Palatine, and Mitsuzo Shida, Barrington, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Division of Ser. No. 909,298, May 24, 1978, Pat. No. 4,423,117, which is a division of Ser. No. 820,611, Aug. 1, 1977, Pat. No. 4,298,712, which is a continuation-in-part of Ser. No. 681,480, Apr. 29, 1976, abandoned. This application Oct. 7, 1983, Ser. No. 540,005

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—195 **16 Claims**

1. A method of making a composite structure comprising the step of adhering a modified polyolefin blend to a solid substrate, said polyolefin blend consisting essentially of:

(A) about 0.1–95 parts by weight in said blend of a graft copolymer of about 70–99.999 wt.% of a high density polyethylene backbone grafted with about 30–0.001 wt.% of x-methylbicyclo(2.2.1)hept-5-ene-2,3-dicarboxylic acid anhydride blended with both

(B) at least one elastomer of the class consisting of homopolymers of isobutylene, copolymers of isobutylene, homopolymers of chloroprene, copolymers of a diene and a vinyl aromatic compound, block copolymers of diene and a vinyl aromatic compound, copolymers of a hydrogenated diene and a vinyl aromatic compound, hydrogenated block copolymers of a diene and a vinyl aromatic compound, homopolymers of butadiene, and a copolymer of an ethylenically unsaturated nitrile and a diene, and

(C) at least one polyolefin resin of the class consisting of homopolymers of ethylene, copolymers of ethylene and an ethylenically unsaturated ester, and copolymers of ethylene and alpha-olefin.

4,486,470

CASTING AND COATING WITH METALLIC PARTICLES

Earl N. Stuck, Wareham, Mass., and Victor F. Zackay, New Canaan, Conn., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 427,900, Sep. 29, 1982, Pat. No. 4,405,296, which is a division of Ser. No. 300,224, Sep. 8, 1981, Pat. No. 4,374,789. This application Sep. 15, 1983, Ser. No. 532,537

Int. Cl.³ B05D *1/12, 1/02*

U.S. Cl. 427—196 **15 Claims**

1. A process for producing a metallic article comprising steps of:

defining a Coanda surface;

flowing a first fluid along the Coanda surface;

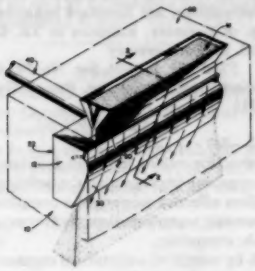
locating a second fluid adjacent the Coanda surface, said first and second fluids being selected and located with respect to each other so that the flow of said first fluid influences said second fluid to flow in a direction which intersects said first fluid;

flowing a molten metal adjacent the Coanda surface;

locating the molten metal flow so that said molten metal flow is located between said first and second fluids;

flowing said fluids and said molten metal to an intersection position whereat said first and second fluids intersect, said

fluids and said molten metal intermixing thereby breaking up said molten metal flow into metallic droplets; and



depositing said metallic droplets onto a substrate to produce a metallic article.

4,486,471

PROCESS FOR PREPARING ETHYLCELLULOSE MICROCAPSULES

Masayoshi Samejima, Minoh; Goichi Hirata, Yawata; Yoshiyuki Koida, Katano, and Akira Kida, Settsu, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed May 5, 1982, Ser. No. 375,046

Claims priority, application Japan, May 29, 1981, 56-82728

Int. Cl.³ A61K *9/52, 9/62;* **B01J** *13/02*

U.S. Cl. 427—213.3 **20 Claims**

1. A method of preparing ethylcellulose microcapsules comprising:

(i) dissolving ethylcellulose having an ethoxy content of 47 to 55 w/w % in cyclohexane to form a solution,

(ii) dispersing particles of a pharmaceutically active compound, having a particle size of 30–1000 microns, in said solution to form a dispersion,

(iii) adding a water-insoluble, acid-soluble polymer material to said dispersion in an amount of 0.1 to 20 grams per gram of said ethylcellulose, and

(iv) cooling said dispersion containing said polymer material until said ethylcellulose separates therefrom to form coating walls on and around said particles of said pharmaceutically active compound thereby forming microcapsules.

4,486,472

METHOD OF PREVENTING A COMBUSTION FURNACE FROM CORROSION

Takanobu Shinohara, Chiba; Toshio Anzai, and Tatsuji Shinogaya, both of Mobara, all of Japan, assignors to Toyo Engineering Corp. and Nippon Zeon Co., Ltd., both of Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,319

Claims priority, application Japan, Dec. 28, 1981, 56-214121

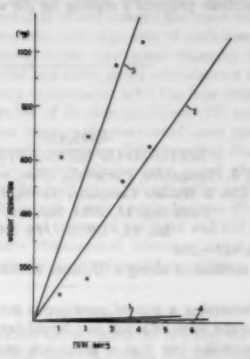
Int. Cl.³ B05D *7/22*

U.S. Cl. 427—239 **10 Claims**

1. A method of reducing corrosion of a furnace, which comprises the steps of:

prior to operating said furnace, forming a firmly adherent coating layer comprising a carbonate selected from the group consisting of alkali metal carbonates and alkaline earth metal carbonates, on the portion of the interior metal surface of said furnace that will be contacted by ash during operation of said furnace; and

then operating said furnace by burning materials containing chlorides so as to generate a high temperature combustion gas containing ash suspended therein and containing gaseous hydrochloric acid, and contacting said coating with said ash and said gaseous hydrochloric acid during said burning so that said carbonate reacts with hydrochloric acid to form a neutral salt ash, thereby preventing corro-



sion of said portion of said interior metal surface during operation of the furnace.

4,486,473

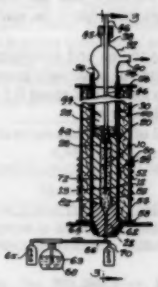
METHOD AND APPARATUS FOR COATING FRAGILE ARTICLES IN A FLUIDIZED BED OF PARTICLES USING CHEMICAL VAPOR DEPOSITION

James L. Kaae, Solana Beach; Terry D. Gulden, and Ling Yang, both of La Jolla, all of Calif., assignors to GA Technologies Inc., San Diego, Calif.

Filed Sep. 21, 1983, Ser. No. 534,369

Int. Cl.³ C23C *11/00*

U.S. Cl. 427—249 **8 Claims**



1. A method for using chemical vapor deposition to coat a large article having a pair of faces and which is relatively thin between said faces so that the object is subject to breakage in the presence of surging particles, the method comprising

Providing a vertical coating chamber having a pair of opposed endwalls and a pair of opposed vertical sidewalls which are configured to generally parallel the faces of the article when the article is centered between said sidewalls, said sidewalls having a horizontal dimension between about 2 and about 10 times the horizontal dimension of said endwall,

suspending said article within said chamber with said faces centered between said sidewalls,

charging said chamber with particulate material to provide an appropriate surface to volume ratio within said chamber,

flowing a carrier gas upwardly through said chamber at a rate sufficient to fluidize said charge of particulate material, creating a fluidized bed extending above the suspended article,

mixing suitable vapors with said carrier gas, and

heating said chamber to a temperature whereat chemical reactions produce a coating on the suspended article.

4,486,474

METHOD OF SIZING STRANDS

William J. Hampshire, Peninsula, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 13, 1983, Ser. No. 531,792

Int. Cl.³ B05D *1/18, 3/02*

U.S. Cl. 427—296 **9 Claims**

1. A method of sizing a filament which comprises the steps of

A. Immersing a mat of continuous strand filament wound into the form of a roll in a liquid ketone solvent solution containing less than a saturation amount of unsaturated epoxy resin and polyamine cross-linking curative therefor in a container with a vapor space above said solution, where said ketone chemically blocks said polyamine from crosslinking said epoxy resin.

B. Soaking the immersed filament roll in said solution at substantially atmospheric pressure until the said roll is substantially saturated with said solution.

C. Applying a vacuum to said vapor space, to remove residual air and thereby more completely saturate said roll with said solution.

D. Removing the vacuum separating said roll from said solution, and placing said roll in a suitable container.

E. Applying a vacuum to said suitable container to remove residual ketone solvent from the roll, thereby unblocking said polyamine curative and allowing the curative to partially cross-link said epoxy on said filament to a "B" stage cure.

F. Removing said vacuum and recovering the roll of sized strand filaments having a partially crosslinked epoxy coating thereon in an amount of about 0.5 to about 15 weight percent of the filament and

G. Cooling said roll of sized filament to at least 10° C. to stop the crosslinking reaction.

4,486,475

METHOD OF MODIFYING WOOD

Gennady M. Shutov; Maya E. Erdman; Valery S. Boltovsky; Adel I. Solomakha; Alexandr F. Nosevich; Miroslav E. Pukhalsky, all of Minsk; Vladimir A. Kirichenko, and Valentin V. Derbyshkin, both of Krasnodarsky krai, all of U.S.S.R., assignors to Belorussky Tekhnologichesky Institut, Sverdlova, U.S.S.R.

Filed Dec. 1, 1981, Ser. No. 326,719

Int. Cl.³ B05D *1/18, 3/12, 3/02*

U.S. Cl. 427—351 **6 Claims**

4. A method of modifying wood, comprising the following steps:

impregnating wood with a modifying system,

drying the impregnated wood in an autoclave using a hydrophobic heat transfer agent, and curing the modifying system in the wood,

the steps of drying and curing being performed under vacuum in the same autoclave and using the same heat transfer agent, the temperature of the heat transfer agent being in the range 40° to 85° C. for the drying stage and raised to a temperature of 110° to 140° C. for the curing stage.

4,486,476

PREPARATION FOR MAKING INORGANIC BUILDING MATERIALS WATER-REPELLENT

Herwig Fritsch, Gladbeck; Götz Koerner, Essen; Herbert Quiltisch, Heiligenhaus, and Eckehard Schamberg, Essen, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Apr. 5, 1984, Ser. No. 597,471

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1983, 3312911

Int. Cl.³ A23F *3/00*

U.S. Cl. 427—387 **13 Claims**

12. A method for making inorganic building materials water repellent comprising impregnating the building material with a water-repellent effective amount of a composition for making building materials water-repellent, before or after shaping of the materials, comprising

(a) 1 to 20% by weight of a mixture of organoalkoxypolysiloxanes having the formula I

$$R_a^1-Si-(OR^2)_b$$
$$\Big|$$
$$O_{\frac{4-(a+b)}{2}}$$

in which

R^1 is an alkyl or aryl radical,

R^2 is an alkyl radical with 1 to 4 carbon atoms,

a=0.8 to 1.5, and

b is not greater than 2;

said mixture being composed of

25 to 75% by weight of said organoalkoxypolysiloxane wherein b is from 0.1 to 0.5 designated siloxane A; and

75 to 25% by weight of said organoalkoxypolysiloxane wherein b is from 0.8 to 2.0 designated siloxane B;

and wherein the sum of a and b is not greater than 3;

(b) 80 to 99% by weight of a water immiscible solvent.

4,486,477

PROCESS FOR THE PRODUCTION OF RUBBER ARTICLES REINFORCED WITH STEEL CORDS

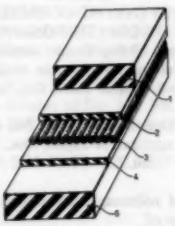
Jean Mirza, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 23, 1983, Ser. No. 507,147

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3224785

Int. Cl.³ B05D *3/02*; B60C *5/00*

U.S. Cl. 427—388.1 **11 Claims**



1. A process for the production of reinforced rubber articles comprising an alloy-coated steel cord reinforcement and a peroxidically cross-linkable rubber selected from the group consisting of chlorinated polyethylene and completely or partly hydrogenated acrylonitrile-butadiene-copolymer, which comprises sheathing the steel cord with a rubber mixture B which contains from 0.5 to 10 parts by weight of sulphur or a corresponding amount of sulphur donor, based on 100 parts by weight of rubber in the rubber mixture B, and has a layer thickness of $\leqq 3$ mm; applying a rubber mixture A to the

rubber mixture B, which mixture A contains from 1 to 15 parts by weight of a peroxide, based on 100 parts by weight of rubber in the rubber mixture A, the peroxide having a decomposition point of above 130° C.; and then vulcanising the layers together at a temperature of above 130° to 220° C.

4,486,478

MULTI LAYER LAMINATED TRIM SYSTEM

Ciro Madonia, and Christopher Hatzikelis, both of c/o P.O. Box 39, Bolton, Ontario, Canada

Continuation-in-part of Ser. No. 284,142, Jul. 16, 1981, abandoned, which is a continuation of Ser. No. 145,777, May 20, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,273

Int. Cl.³ B32B *25/08;* **B60K** *13/00*

U.S. Cl. 428—31 **5 Claims**

1. A composite trim section having a first extruded portion of a thermoplastic rubber, a second portion substantially longitudinally co-extensive therewith being of polyvinyl chloride film not generally adherable with said first portion, said first and second portions each having a surface area in facing relation with the other portion, an intermediate portion located between said facing area portions of a third material bonded in heat sealed relation to said thermoplastic rubber constituting the sole securing agent between said first and second portions consisting of a single component polyolefin being in itself adherently compatible with said first and second portions, to provide substantially non-delaminating adhesion between said portions, said polyvinyl chloride film having a decorative finish layer in adherent protective relation therewith.

4,486,479

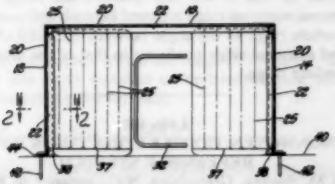
HOLLOW THREE DIMENSIONAL AIR-INFLATABLE STRUCTURES

Erwin F'Geppert, Oakland County, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 7, 1983, Ser. No. 549,095

Int. Cl.³ B32B *3/20*

U.S. Cl. 428—35 **5 Claims**



1. A hollow three dimensional structure having flat planar outer wall surfaces and sharp connecting corners; said structure being formed entirely of flexible material; said structure having a flat roof wall and a number of flat side walls extending downwardly from edge areas of the roof wall, the juncture between the roof wall and each side wall constituting a sharp connecting corner; the roof wall and at least some of the side walls being air-inflatable from deflated conditions of minimum wall thickness to internally pressurized rigid conditions of maximum wall thickness; each of the air-inflatable walls being comprised of an outer flexible panel, an intermediate flexible panel, and an inner flexible panel; each inner panel having perimetrical edge areas (52) turned toward the inner surface of the outer panel, the perimetrical edge area of each inner panel being sealingly connected to the outer panel whereby the zone between the inner panel and outer panel constitutes a pressurizable air bag generally coextensive with the face area of the outer panel; a first series of flexible partitions (54) extending from each intermediate panel to the associated outer panel; and a second series of flexible partitions (54) extending from each inner panel to the associated intermediate panel; the outer panel in each air-inflatable wall being flat when the wall is in an inflated condition; the panels being constructed so that when the air bags are pressurized the walls are rigid and self-sustaining, whereby the three dimensional structure is resistant to deformation under adverse environmental conditions.

4,486,480

RUBBER HOSE COMPRISING A LIQUID NITRILE-BUTADIENE COPOLYMER INCORPORATED INTO A PARTIALLY HYDROGENATED UNSATURATED ACRYLONITRILE-BUTADIENE COPOLYMER

Tadaoki Okumoto, Inazawa; Masatoshi Sugimoto, Kounan; Takashi Kawazoe, Yotsukaichi; Seiichi Sahara, Nagoya; Tetsuo Yamada, Toyota; Kinrou Hashimoto, Yokohama; Masayoshi Ichikawa, Ichinomiya, and Kenichi Funato, Iwakura, all of Japan, assignors to Toyoda Gosei Co., ltd., Nishikasugai and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Nov. 19, 1982, Ser. No. 442,977

Claims priority, application Japan, Dec. 30, 1981, 56-213272; Dec. 30, 1981, 56-213273

Int. Cl.³ F16L *11/04;* **C08K** *5/29;* **B32B** *27/08*

U.S. Cl. 428—36 **4 Claims**

1. A rubber hose having the internal layer made of a vulcanized rubber composition of partially hydrogenated unsaturated nitrile-conjugated diene copolymer rubber in which at least 50% of the conjugated diene units are hydrogenated, said copolymer rubber being incorporated with more than 2 wt% of liquid unsaturated nitrile-conjugated diene copolymer having a number-average molecular weight of 500 to 10,000.

4,486,481

EXCHANGE-DISCHARGE BODY WITH REACTIVE MATERIAL

Dieter Heitkamp, and Klaus Wagener, both of Jülich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 319,889, Nov. 10, 1981, abandoned, which is a continuation of Ser. No. 137,605, Apr. 7, 1980, abandoned. This application Aug. 25, 1983, Ser. No. 526,504

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914079

Int. Cl.³ B01J *47/10*

U.S. Cl. 428—65 **1 Claim**

1. A system for treating large bodies of liquid by exchange, the system comprising multiple independent elements which have a density different from that of the liquid body, wherein

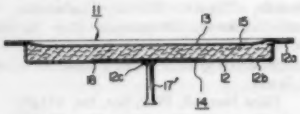
when the elements are released in the liquid body the elements travel through the liquid body; each element being configured with a stiff outer ring formed about an axis and having a diameter greater than its length; an open frame extending within each of the rings; the open frame having a reactive surface for effecting an ion exchange with material in the body of liquid as the elements travel through the liquid, and wherein the open frame is configured with radially extending blades each of which slants at an angle with respect to the axis of the ring whereby the elements spin about their axis as they travel through the liquid; and means included with each element for orienting the axis of the element vertically as the element travels through the liquid.

4,486,482

VACUUM HEAT INSULATOR

Nobuyuki Kobayashi; Yoritsune Abe; Katuo Shibata, and Yukio Watanabe, all of Tochigi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 15, 1983, Ser. No. 504,450
Int. Cl.³ B32B *17/02, 1/02*
U.S. Cl. 428—69 **7 Claims**



1. A vacuum heat insulator comprising a receptacle defined by thin metal plates each having a flat portion providing opposing walls of the receptacle and a stack of glass fibers contained in said receptacle, the majority of the fibers of said stack being arranged at random in a direction parallel to said walls and perpendicular to a heat transfer direction and said receptacle being adapted to be sealed to place the interior thereof in a vacuum condition; some of the glass fibers of said glass fiber stack having been penetrated thereinto as penetration glass fibers that extend in said heat transfer direction while said glass fiber stack is maintained in a compressed condition to provide a glass fiber stack of high density held together by said penetration glass fibers whereby, upon application of the vacuum condition to said receptacle, the opposing walls are deformed inwardly and are supported by said glass fiber stack.

4,486,483

POLYESTER FILM PRIMED WITH ORGANIC ACID SALTS

R. Scott Caines, Greer, S.C., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Jul. 11, 1983, Ser. No. 512,254
Int. Cl.³ B32B *27/14, 27/36*
U.S. Cl. 428—195 **17 Claims**

1. An oriented self-supporting polyester film having a thin continuous primer coating on one or both sides thereof, said coating consisting essentially of a salt selected from the group consisting of:

(a) a water soluble alkali metal salt of an unsaturated fatty acid having from 10 to 18 carbon atoms and mixtures of such salts; or

(b) a water soluble alkali metal salt of an alkyl sulfate having 8 to 18 carbon atoms, and mixtures of said salts,

said primer coating being present at a weight effective to improve the adhesion of printing inks to said film.

2. The film of claim 1 wherein said oriented polyester film is biaxially oriented polyethylene terephthalate film.

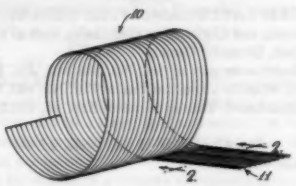
3. The film of claim 2 having a printing ink composition applied directly to said primer coating.

4,486,484

STRIP OF FLEXIBLE CORRUGATED MATERIAL

Günter Schafer, Ft. Lauderdale, Fla., assignor to Security Lumber & Supply Co., Bradley, Ill.

Filed Sep. 28, 1982, Ser. No. 425,567
Int. Cl.³ B32B *3/28, 1/08*
U.S. Cl. 428—182 **4 Claims**



1. In a strip of very thin flexible material that is provided with continuous longitudinal corrugations in the form of curved ridges and hollows that occupy the entire width of the strip and have alternating apices and nadirs, each of said ridges having two sides connected by an arc that has a predetermined radius of curvature so each of said two sides occupies a predetermined angle with respect to the other of said two sides and with respect to a reference plane that intersects the apex of said arc and is perpendicular to a base line tangent to all said nadirs, there being first and second marginal ridges along opposite borders of said strip each of which has an inner side, and an outer side that defines one of said borders, and intermediate ridges between said marginal ridges, said strip being adapted to be curled helically to form a flexible tube with the first marginal ridge overlying a first intermediate ridge and the second marginal ridge underlying a second intermediate ridge, the improvement comprising:

all the intermediate ridges have arcs with effectively the same radius of curvature,

at least a part of the arc of the first marginal ridge has a radius of curvature smaller than that of all other ridges so the angle between the sides of said first marginal ridge is less than that between the sides of the intermediate ridges before said strip is helically curled,

and at least a part of the arc of the second marginal ridge has a radius of curvature larger than that of all other ridges so the angle between the sides of said second marginal ridge is greater than that between the sides of said intermediate ridges before said strip is helically curled,

whereby, as the strip is helically curled, said first marginal ridge is spread over said first intermediate ridge so the angle between the sides of said first marginal ridge conforms to that of the first intermediate ridge, and said second marginal ridge is closed beneath said second intermediate ridge so the angle between the sides of said second marginal ridge conforms to that of the second intermediate ridge.

4,486,485

NONWOVEN TEXTILE STRUCTURES WITH REVERSIBLE STRETCH

Arnold M. Sookne, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Aug. 24, 1983, Ser. No. 526,144
Int. Cl.³ B32B *27/14*
U.S. Cl. 428—198 **14 Claims**

1. A nonwoven textile structure which exhibits improved stretch/recovery characteristics, said structure comprising a blend of staple fibers having a predetermined minimum staple fiber length and including a first component of nonelastic crimped fibers having a predetermined crimp length and a second component of quasi-elastic fibers, said crimped and quasi-elastic fibers being bonded together at intervals less than

said minimum staple fiber length but greater than said crimp length, said quasi-elastic fibers being substantially uncrimped.

4,486,486

RADIOGRAPHIC IMAGE CONVERSION SCREENS

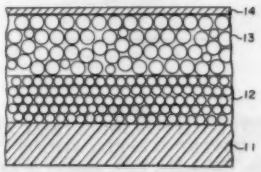
Hidehiko Maeoka, Takaido-Higashi; Etsuo Shimizu, Higashi-Nakano; Yujiro Suzuki, Odawara; Keiji Shimiya, Hiratsuka, and Norio Miura, Isehara, all of Japan, assignors to Kasei Optonix, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 376,020, May 7, 1982,. This application Sep. 30, 1982, Ser. No. 429,031

Claims priority, application Japan, Mar. 15, 1982, 57-39310

Int. Cl.³ B32B *7/02*

U.S. Cl. 428—212 **7 Claims**



1. A radiographic image conversion screen, consisting essentially of: (a) a support; (b) a first fluorescent layer formed on said support consisting essentially of at least one blue emitting phosphor which is selected from the group consisting of

(I) an alkaline earth metal complex halide phosphor represented by the formula:

$$MeF_2{\cdot}pMe'X_2{\cdot}qKX'{\cdot}rMe''SO_4{:}mEu^{2+},\ nTb^{3+}$$

where Me is at least one element selected from the group consisting of magnesium, calcium, strontium and barium, each of Me' and Me'' being at least one element selected from the group consisting of calcium, strontium and barium, each of X and X' being at least one element selected from the group consisting of chlorine and bromine, and p, q, r, m and n are numbers within the ranges of $0.80 \leqq p \leqq 1.5$, $0 \leqq q \leqq 2.0$, $0 \leqq r \leqq 1.0$, $0.001 \leqq m \leqq 0.10$ and $0 \leqq n \leqq 0.05$, respectively;

(II) a divalent metal tungstate phosphor represented by the formula:

$$M^{II}WO_4$$

where M^{II} is a least one element selected from the group consisting of magnesium, calcium, zinc and cadmium;

(III) a zinc sulfide or zinc-cadmium sulfide phosphor represented by the formula:

$$(Zn_{1-j}, Cd_j)S{:}Ag$$

where j is a number within the range of $0 \leqq j \leqq 0.4$; and

(IV) a rare earth tantalate or tantalum-niobate phosphor represented by the formula:

$$(Ln''_{1-v}, Tm_v)(Ta_{1-w}, Nb_w)O_4$$

wherein Ln'' is at least one element selected from the group consisting of lanthanum, yttrium, gadolinium and lutetium, and v and w are numbers within the ranges of $0 \leqq v \leqq 0.1$ and $0 \leqq w \leqq 0.3$, respectively; and

(c) a second fluorescent layer formed on said first fluorescent layer consisting essentially of a green emitting rare earth oxysulfide phosphor represented by the formula:

$$(Ln_{1-i-a-b}, Y_i, Tb_a, R_b)_2O_2S$$

where Ln is at least one element selected from the group consisting of La, Gd and Lu, R is at least one element selected from the group consisting of Dy, Pr, Yb and Nd, and i, a and b are numbers within the ranges of $0 \leqq i \leqq 0.35$, $0.0005 \leqq a \leqq 0.09$ and $0.0002 \leqq b \leqq 0.01$, respectively.

6. The radiographic image conversion screen according to claim 1 wherein the phosphor in the blue emitting phosphor layer has a mean grain size of from 2 to 10μ, a standard deviation (quartile deviation) of the grain size of from 0.20 to 0.50 and a coating weight of from 2 to 100 mg/cm², and the phosphor in the green emitting rare earth oxysulfide phosphor layer has a mean grain size of from 5 to 20μ, a standard deviation (quartile deviation) of the grain size of from 0.15 to 0.40 and a coating weight of from 5 to 100 mg/cm².

4,486,487

COMBINATION FILM, IN PARTICULAR FOR THIN FILM ELECTROLUMINESCENT STRUCTURES

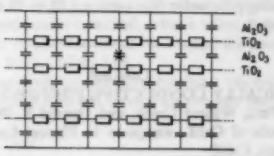
Jarmo I. Skarp, Helsinki, Finland, assignor to Oy Lohja Ab, Virkkala, Finland

Filed Apr. 25, 1983, Ser. No. 488,178

Claims priority, application Finland, May 10, 1982, 821647

Int. Cl.³ B32B *15/04*

U.S. Cl. 428—216 **8 Claims**



1. An insulative film for a thin film structure, comprising alternating layers of aluminum oxide (Al_2O_3) and titanium oxide (TiO_2), said film having between 10 and 200 of said layers, wherein each layer has a thickness in the range of 3 to 1000 Å.

4,486,488

COMPOSITION FOR THE PRODUCTION OF BANDAGES, BANDAGES PRODUCED THEREWITH AND METHOD FOR THE PRODUCTION THEREOF

Hanns Pietsch, Hamburg, and Volker Hohmann, Norderstedt, both of Fed. Rep. of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 262,147, May 11, 1981, abandoned. This application Mar. 17, 1983, Ser. No. 476,042

Claims priority, application Fed. Rep. of Germany, May 17, 1980, 3018969

Int. Cl.³ B65B *55/02*; A61F *13/00*; B32B *7/02*

U.S. Cl. 428—219 **28 Claims**

1. A bandage comprising a substrate and a composition consisting by weight essentially of

10–35% zinc oxide

2–15% cellulose ether

10–35% glycerin

30–75% water.

4,486,489

FILMS OF HYDROPHILIC INTERPOLYMERS OF NEUTRALIZED ACRYLIC ACID, HYDROXYALKYL METHACRYLATE OR DIALKYLAMINOALKYL (METH)ACRYLATE AND OPTIONALLY A CROSS-LINKING AGENT

Paul J. George, Richfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 166,936, Jul. 8, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 427,325

Int. Cl.³ B32B *00/00*; **C08F** *220/28, 220/36, 220/64*

U.S. Cl. 428—220 **5 Claims**

1. A water insoluble, flexible, highly water absorbent polymeric film having up to 25 mil thickness and containing 25 to 45 weight percent of water, said film being prepared by photopolymerizing a monomer mixture consisting of

(a) 65 to 95 weight percent of acrylic acid, 60 to 100 percent of the carboxylic groups having been neutralized with an alkali metal hydroxide or ammonia base prior to polymerization,

(b) 5 to 35 weight percent of a comonomer selected from the group consisting of 2-hydroxyethyl methacrylate and dialkylaminoalkyl acrylate or methacrylate wherein each alkyl of the dialkyl groups has 1 to 8 carbons and the other alkyl group has 2 to 6 carbons, and

(c) 0 to 5 weight percent, based on the weight of the monomers, of a cross-linking agent which contains two or more ethylenic unsaturations in the presence of 0.01 to 5 weight percent, based on the total weight of the monomers, of a photoinitiator and a sufficient amount of water so that the resulting polymeric film contains 25 to 45 weight percent of water.

4,486,490

ELECTRICALLY CONDUCTIVE PREPREG MATERIALS

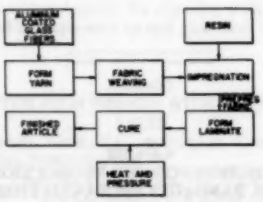
Gary L. Patz, Walnut Creek, and Donald E. Davenport, Palo Alto, both of Calif., assignors to Hexcel Corporation, San Francisco, Calif.

Division of Ser. No. 7,096, Jan. 29, 1979, Pat. No. 4,234,648. This application Jul. 31, 1980, Ser. No. 174,299

The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—245 **13 Claims**



1. A prepreg material comprising a web defined by a multiplicity of elongated fiber bundles arranged to substantially cover the entire surface area of the web, individual fibers of the bundles being constructed of a dielectric material, at least some of the individual fibers in at least some of the bundles of the web having an individual metallic surface coating extending over substantially the full length of said some fibers, and an uncured, curable resin applied to the web to form a resin impregnated prepreg material that is readily deformable; whereby the prepreg material can be transformed into a rigid article exhibiting conductivity supplied by the metallic coating by appropriately shaping the prepreg material and, while in the desired shape, curing the resin to rigidify the material in the desired shape.

4,486,491

NON-RICOCHETING ARMOR PANEL

Peter S. Kerekes, 134 Kirk Dr., Thornhill, Ontario, Canada (L3T 3L4); Wagdi Kaddis, 22 Trott Sq., Scarborough, Ontario, Canada (M1B 1V8), and Alfred J. Halial, 7235 Pierre Corneille, Montreal, Quebec, Canada H1M 1L3

Filed Feb. 13, 1984, Ser. No. 579,397

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—251 **10 Claims**

1. A self-supporting, decorative, armor panel having: a central armor core consisting of layers of fiberglass bonded together with resin; an outer, nonricocheting laminate on each side of the core, each laminate comprising an outer, decorative cover layer and a plurality of paper layers bonded together with resin; the laminates bonded to the core simultaneously with the bonding together of all the layers.

4,486,492

INSULATED CLOTH FOR INDUSTRIAL AND CIVIL COVERING APPLICATIONS

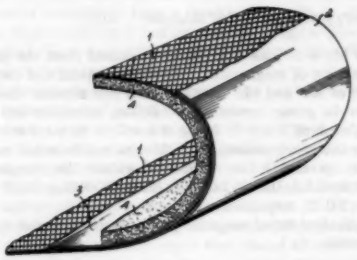
Alberto Ziliotto, Cadoneghe, Italy, assignor to La Plastiveneta S.p.A., Cadoneghe, Italy

Filed Jun. 14, 1983, Ser. No. 504,336

Claims priority, application Italy, Jun. 22, 1982, 30736/82[U]

Int. Cl.³ B32B *5/18, 5/24, 5/32*

U.S. Cl. 428—252 **3 Claims**



1. An insulated cloth for industrial and civil covering applications, comprising:

a first support layer formed of a high toughness cloth made of a polymeric material selected from polyester and polyamide, said support layer having a first surface and a second surface opposite to said first surface;

a second coating layer made of a compact plastic composition, adjacent said first support layer at said first surface thereof and forming an outside coating with an exposed side;

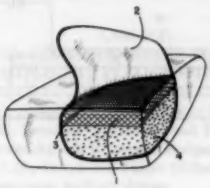
a third coating layer of compact polyvinylchloride (PVC) adjacent said first support layer at said second surface thereof, said third coating layer defining a first contact side facing said second surface of said first support layer and a second contact side opposite to said first contact side; and

a fourth coating layer of foamed polyvinylcholride (PVC) with half-open surface cells and closed inside cells, said fourth coating layer extending adjacent and bonded to said third coating layer of compact polyvinylchloride at said second contact side thereof, said fourth coating layer defining a first contact surface attached to said contact side of said third coating layer and a second contact surface opposite to said first contact surface and forming an inner exposed face.

4,486,493
CUSHION BODY

Holger Burmester, Auggen, and Klaus Veeser, Müllheim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim/Bergstrasse, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,323
Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220088
Int. Cl.³ B32B 7/00
U.S. Cl. 428—253 11 Claims



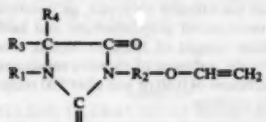
1. A cushion body, suitable for use as an automobile cushion, comprising a deformable spring body which is air and moisture permeable, an outermost air permeable surface covering, and disposed intermediate the spring body and outermost surface covering, a buffer layer, wherein the buffer layer has an area weight of about 150 to about 350 gm/m^2 and is comprised substantially of cellulose fibers, and wherein the spring body is comprised of a network of intersecting fibers which are bonded together at their points of intersection, and wherein the spring body has a bulk weight of about 10 to about 100 kg/m^2, a thickness of about 5 to about 20 mm, and the fibers which form the spring body have hydrophilic properties and a titer of about 3 to about 50 dtex.

4,486,494
FIBRE COMPOSITE PREPREGS COATED WITH TWO DIFFERENT RESINS

Sameer H. Eldin, Fribourg, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 30, 1983, Ser. No. 556,745
Claims priority, application Switzerland, Dec. 8, 1982, 7141/82
Int. Cl.³ B32B 27/12, 27/30, 27/38
U.S. Cl. 428—260 6 Claims

1. A fibre composite prepreg comprising:
(a) reinforcing fibres, or a fabric formed therefrom, coated with a copolymer, the copolymer consisting of maleic anhydride or a maleic acid derivative and a hydantoin vinyl ether of the formula I



(I)

wherein R_1 is hydrogen or an organic radical, R_2 is an alkylene group having 1 to 6 C atoms or the radical —alkylene-O)$_n$ alkylene, wherein the alkylene groups contain 1 to 6 C atoms, and n is a number from 1 to 6, and R_3 and R_4 independently of one another are each hydrogen, an alkyl group having 1 to 6 C atoms, or an aryl group, or R_3 and R_4 together are the tetra- or pentamethylene group, the molar ratio of hydantoin vinyl ether to maleic anhydride or to the maleic acid derivative in the copolymer being 0.5:1 to 1:1, and
(b) a curable resin matrix.

6. A fibre composite system, particularly a fibre composite laminate, produced from the fibre composite prepreg according to claim 1 by moulding and crosslinking of the resin matrix.

4,486,495
METHOD FOR MANUFACTURING A RUBBER SHEET WHICH IS ELECTRICALLY INSULATING AND THERMALLY RADIATING AND RUBBER SHEETS MADE THEREFROM

Takao Matsushita, and Koji Shimizu, both of Chiba, Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1983, Ser. No. 503,911
Claims priority, application Japan, Jun. 14, 1982, 57-101895
Int. Cl.³ B05D 3/02; B32B 7/00; D03D 3/00; D04B 1/00
U.S. Cl. 428—266 10 Claims

1. A method for manufacturing a rubber sheet which is electrically insulating and thermally radiating,
comprising coating a network insulating material with a fluid silicone rubber composition and then curing said composition, where the fluid silicone rubber composition consists essentially of
(a) 100 parts by weight of a polyorganosiloxane having a viscosity at 25° C. of from 0.1 to 100 Pa·s and having an average unit formula

$$R_aR'_bSiO_{(4-a-b)/2}$$

wherein each R represents a monovalent hydrocarbon radical free of aliphatic unsaturation or a halogenated monovalent hydrocarbon radical free of aliphatic unsaturation, each R′ represents a monovalent aliphatically unsaturated hydrocarbon radical, a has a value from 1.90 to 2.05, b has a value from 0.0005 to 0.1, and the sum of a+b has a value from 1.91 to 2.06,
(b) a polyorganohydrogensiloxane having a viscosity at 25° C. of 0.0007 to 5 Pa·s and having an average unit formula

$$R_cH_dSiO_{(4-c-d)/2}$$

wherein R is defined above, the sum of c+d has a value of 1.001 to 3, there is at least two silicon-bonded hydrogen atoms per molecule, and said polyorganohydrogensiloxane is present in an amount such that there are 0.5 to 10 equivalents of silicon-bonded hydrogen atoms per equivalent of aliphatically unsaturated hydrocarbon radical in (a),
(c) from 100 to 500 parts by weight of alumina powder, and
(d) a catalytic quantity of a platinum-group compound as a catalyst.

6. An electrically insulating and thermally radiating rubber sheet prepared in accordance with the method of claim 1.

4,486,496
MAGNETIC RECORDING MEDIUM

Shin-ichiro Dezawa; Goro Akashi, and Tatsuji Kitamoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 26, 1982, Ser. No. 382,337
Claims priority, application Japan, May 26, 1981, 56-79684
Int. Cl.³ G11B 5/68, 5/70; B32B 5/16
U.S. Cl. 428—328 6 Claims

1. A magnetic recording medium which comprises (a) a non-magnetic support, (b) a magnetic layer containing plate-shaped magnetic particles having a mean particle size of 0.1 μm to 20 μm and a coercive force of 300 to 3,000 oersteads, and satisfying the following relationship

$$K/2\pi M_s^2 \geq 1$$

wherein K represents the magnetic anisotropy constant in the direction perpendicular to the individual plate-shaped magnetic particles' major plate plane, M_s represents saturation magnetization, and π is the ratio of circumference of a circle to

its diameter, and which have axes of easy magnetization perpendicular to their plate planes dispersed in a binder, said

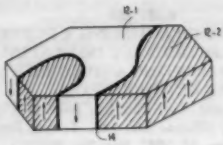


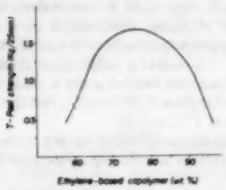
plate-shaped magnetic particles each having a multiple magnetic domain structure and having a particle diameter equal to or longer than the recorded effective shortest wavelength.

4,486,497

LAMINATED MATERIAL

Makoto Mizutani, Sodegaura, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Jul. 7, 1982, Ser. No. 395,966
Claims priority, application Japan, Jul. 18, 1981, 56-112843
Int. Cl.³ C09H *7/02*; B32B *15/08*
U.S. Cl. 428—332 **13 Claims**



1. A laminated material comprising an aluminum or polypropylene substrate and a resin composition layer provided on the substrate by an extrusion lamination method, said composition layer consisting essentially of from 60 to 92.5% by weight of an ethylene copolymer selected from the group consisting of ethylene-vinyl acetate copolymers, ethylene-ethyl acrylate copolymers, and ethylene-butene-1 copolymers, said copolymers containing between 40 and 99 mol% of ethylene, and from 40 to 7.5% by weight of a reaction product of polypropylene and maleic acid or anhydride thereof, wherein the amount of said unsaturated carboxylic acid or anhydride thereof is between 0.005 and 10% by weight.

4,486,498

MAGNETIC RECORDING MEDIUM

Seitoku Saito, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 286,289, Jul. 23, 1981, Pat. No. 4,416,943. This application Sep. 1, 1983, Ser. No. 528,445
Claims priority, application Japan, Sep. 1, 1980, 55-120969
The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.
Int. Cl.³ B32B *15/00*
U.S. Cl. 428—333 **2 Claims**

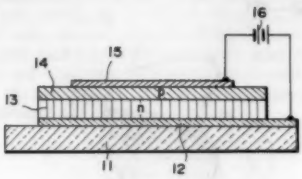
1. A magnetic recording medium comprising a substrate layer and at least one magnetic layer consisting essentially of cobalt as a main component and zinc, rhodium or iridium as an additional component wherein the ratio of Co:Zn ranges from 70–86:14–30, Co:Rh ranges from 73–85:15–27, and Co:Ir ranges from 75–90:10–25 of an alloy of a magnetic layer wherein axes of easy magnetization of said components are substantially perpendicular to a surface of said magnetic layer and thickness of said magnetic layer is in a range of 500 • to 3 μm.

4,486,499

ELECTROLUMINESCENT DEVICE

Kiyoshi Morimoto, Mobara, Japan, assignor to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan

Filed Jun. 5, 1981, Ser. No. 270,884
Claims priority, application Japan, Jun. 13, 1980, 55-78952
Int. Cl.³ H05B *33/14*; B32B *17/06*
U.S. Cl. 428—336 **5 Claims**



1. An electroluminescent device comprising:
a transparent glass substrate;
a transparent electrode deposited on said transparent glass substrate;
a phosphor layer about 0.1 to about 10 μm thick having characteristics of an n-type semiconductor deposited on said transparent electrode, said layer comprising an n-type dopant in sufficient concentrations to provide said n-type characteristic;
a semiconductor layer consisting of copper sulfide having characteristics of a p-type semiconductor deposited on said phosphor layer; and
a back electrode deposited on said semiconductor layer.

4,486,500

MAGNETIC RECORDING MEDIUM

Kyoichi Naruo; Nobuyuki Yamamoto, and Tsutomu Okita, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 356,547, Mar. 9, 1982, abandoned. This application Oct. 19, 1983, Ser. No. 542,899
Claims priority, application Japan, Mar. 9, 1981, 56-33580
Int. Cl.³ B05D *5/12*
U.S. Cl. 428—336 **8 Claims**

1. A magnetic recording medium having a thin magnetic metal film on a non-magnetic base, a surface layer with a thickness less than 0.5 μm being formed on either the thin magnetic metal film or the other side of the base or both, said surface layer being formed by irradiating a coating of a polymer having an unsaturated bond polymerizable by radiation, said polymer having an unsaturated bond polymerizable by radiation being an unsaturated polyester, an unsaturated polyacrylate or an unsaturated polycarbonate and said polymer having a molecular weight of 1,000 to 20,000, wherein said surface layer provides a degree of abrasive resistance resulting in a dynamic coefficient of 0.40 or less after 500 reciprocations, of said recording medium.

4,486,501

PROCESS FOR THE PREPARATION OF FIBERS

Kjeld Holbek, Lejrevej 74, DK-4320 Lejre, Denmark

Continuation of Ser. No. 247,747, Mar. 26, 1981, abandoned. This application Feb. 22, 1983, Ser. No. 468,192
Claims priority, application Denmark, Jul. 31, 1979, 3246/79
Int. Cl.³ D02G *3/00*; B05D *5/10*
U.S. Cl. 428—375 **26 Claims**

1. A method of making fibers coated with a polymer, comprising adding a thermoplastic polymer which becomes sticky at temperatures from about 75° C. to about 400° C. to a fiber material, in the presence of a coupling agent selected from the group consisting of metal oxide acylates, silanes, and metal

complexes, exposing the fiber material and the polymer to impact or grinding forces in a defibrator so that sufficient heat is generated to cause coating of the fibers with the polymer and so that each single fiber is individually coated, and recovering substantially individual polymer coated fibers which become adhesive at a temperature between about 75° C. to about 400° C.

15. Fibers coated with a polymer in accordance with the method of claim 1.

4,486,502

RESIN-COATED CARRIER FOR USE IN TWO-COMPONENT ELECTROPHOTOGRAPHIC DEVELOPERS

Kenkichi Hara, Shibukawa; Shigeo Yokoe; Kazuyoshi Oka, both of Maebashi; Tamotsu Murakami, and Tsugifusa Hashimoto, both of Kawasaki, all of Japan, assignors to Kanto Denka Kogyo Co. Ltd., Tokyo and Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, both of, Japan

Filed Jan. 4, 1983, Ser. No. 455,540

Claims priority, application Japan, Jan. 4, 1982, 57-153

Int. Cl.³ C08F 15/40; G03G 9/10

U.S. Cl. 428—405 6 Claims

1. A carrier for use with toner in a two component electrophotographic developer which comprises a particulate core material coated with a resinous composition consisting essentially of an epoxy-hydroxy hydrocarbon resin and a silicone resin.

4,486,503

SILICONE RESIN COATING COMPOSITION

Howard A. Vaughn, Jr., Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 120,868, Feb. 12, 1980, abandoned, which is a division of Ser. No. 964,910, Nov. 30, 1978, abandoned. This application Sep. 8, 1982, Ser. No. 415,844

Int. Cl.³ B32B 27/36

U.S. Cl. 428—412 12 Claims

1. A solid substrate having at least one surface coated with an aqueous coating composition comprised of a dispersion of colloidal silica, having a particle size of from about 5 to about 150 millimicrons in diameter, in a lower aliphatic alcohol-water solution of the partial condensate of a silanol of the formula $RSi(OH)_3$, wherein R is selected from the group consisting of alkyl having from 1 to 3 carbon atoms and phenyl, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, said composition having a pH of 7.1 to about 7.8.

4,486,504

SOLVENTLESS, ULTRAVIOLET RADIATION-CURABLE SILICONE COATING COMPOSITIONS

Rack H. Chung, Clifton Park, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Mar. 19, 1982, Ser. No. 359,989

The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.

Int. Cl.³ C08F 2/50, 20/28; C08G 77/14

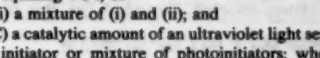
U.S. Cl. 428—412 30 Claims

1. A solventless ultraviolet radiation-curable coating composition free of hydroxy acrylates comprising:

(A) 100 parts by weight silica in the form of a colloidal dispersion;

(B) 5 to 500 parts by weight of an acid hydrolysis product of

(i) an acryloxy-functional silane having a general formula:



wherein R^3 and R^4 are the same or different monovalent hydrocarbon radicals, R^5 is a divalent hydrocarbon radical having from 2 to 8 carbon atoms, R^6 is hydrogen or a monovalent hydrocarbon radical, b is an integer from 1 to 3, c is an integer from 0 to 2, and d is an integer equaling 4-b-c; or

(ii) a glycidoxy-functional silane having a general formula:

wherein R^7 and R^8 are the same or different monovalent hydrocarbon radicals, R^9 is a divalent hydrocarbon radical having from 2 to 8 carbon atoms, e is an integer from 1 to 3, f is an integer from 0 to 2, and g is an integer equaling 4-e-f; or

(iii) a mixture of (i) and (ii); and

(C) a catalytic amount of an ultraviolet light sensitive photoinitiator or mixture of photoinitiators; wherein residual solvent has been removed from said coating composition at reduced pressure.

4,486,505

FLAME-RETARDED COPPER CLAD LAMINATES

Yasuo Fushiki, Takatsuki; Masayuki Oizumi, Otsu; Masaharu Abe, Kobe, and Makoto Watanabe, Shiga, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 15, 1982, Ser. No. 441,634

Claims priority, application Japan, Nov. 16, 1981, 56-184300

Int. Cl.³ B32B 15/08, 15/12, 27/04, 27/42

U.S. Cl. 428—416 4 Claims

1. In a flame retarded copper clad laminate comprising a plurality of paper substrate layers each impregnated with a halogen-containing unsaturated polyester resin composition and a copper cladding adhesively bonded onto at least one side of said laminate, the improvement wherein said halogen-containing unsaturated polyester resin composition contains a basic filler consisting essentially of aluminum hydroxide in a proportion from about 1% to about 30% by weight of said resin composition.

4,486,506

SOLID INSULATOR AND ELECTRIC EQUIPMENT COIL USING THE SAME

Susumu Kenjo, Fujisawa; Minoru Shimahara, Yokkaichi, and Toshio Gokyu, Mie, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 14, 1982, Ser. No. 434,370

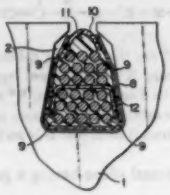
Claims priority, application Japan, Oct. 16, 1981, 56-165031; Jun. 30, 1982, 57-112929; Jun. 30, 1982, 57-112930; Jun. 30, 1982, 57-112939; Jun. 30, 1982, 57-112940

Int. Cl.³ H02H 3/48; H02K 3/36

U.S. Cl. 428—475.2 14 Claims

1. A solid multi-layered insulator comprising: a base film of a polyester impregnated with a water-soluble insulating var-

nish; and a protective film of a resin selected from the group consisting of polypropylene, polyester, fluoropolymer, and



aramid resin, which is formed on at least one major surface of said base film.

4,486,507

TRANSPARENT, SHRINKABLE FILM, CONSISTING OF ONE OR SEVERAL LAYERS

Rudolf Schumacher, Viersen, Fed. Rep. of Germany, assignor to Feldmühle Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed May 5, 1982, Ser. No. 375,210

Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119217; May 14, 1981, 3119142

Int. Cl.³ B32B *27/10*

U.S. Cl. 428—476.1 **16 Claims**

1. A transparent, shrinkable film comprising at least one layer of a polyolefin and at least one layer is of a polyamide composed of a mixture of

85 to 10 weight percent of a linear polyamide, linear copolyamide, or an elastomeric component selected from the group consisting of polybutadiene, mixtures of polyamides and polybutadiene, mixtures of polyamide and nitrile rubber, block copolymers of polyether segments and polyamide segments; and

15 to 90 weight percent of a partially aromatic polyamide or partially aromatic copolyamide,

said film having been stretched at a temperature below 120° C.

4,486,508

LAMINATES FROM AN ADHESIVE FORMED BY A SYSTEM CONTAINING AN HYDROXYL-TERMINATED POLYMER, AN ISOCYANATE-TERMINATED URETHANE AND A POLYISOCYANATE WHICH IS A CROSS-LINKING AGENT

James E. Coughlin, Philadelphia, Pa.; Eugene G. Sommerfeld, Mt. Laurel, N.J., and Clifford H. Strolle, Springfield, Pa.; assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 404,981, Aug. 2, 1982, Pat. No. 4,419,476, which is a continuation-in-part of Ser. No. 310,069, Oct. 9, 1981, abandoned. This application Sep. 23, 1983, Ser. No. 535,343

Int. Cl.³ C08L *75/04*

U.S. Cl. 428—480 **15 Claims**

1. A laminate comprising substrates bound together by an adhesive formed in situ by

a polymeric polyol A having a molecular weight $\overline{M}_n$ of about 1,000–5,000 and soluble in methyl ethyl ketone or ethyl acetate to the extent of at least 65% by weight chain-extended and thereby increased in molecular weight by reaction with an isocyanate-capped polyester-urethane B making a block copolymer therewith,

said polyester-urethane B being formed from a hydroxyl-bearing polyester made from at least one polyol and at least one diacid wherein

the ratio

$$X_{1B} = \frac{\text{Total Moles of Polyol}}{\text{Total Moles of Diacid}}$$

is within the range 1.05/1–1.5/1 and the molecular weight $\overline{M}_n$=500–4,000,

the ratio

$$X_{2B} = \frac{\text{Total Moles of Diol}}{\text{Total Moles of Polyol}}$$

is within the range 5/1-∞,

the ratio

$$X_{3B} = \frac{\text{Moles of Aromatic Acid}}{\text{Total Moles of Acid}}$$

is within the range 0–0.08/1, and

the ratio

$$X_{4B} = \frac{\text{Equivalents of } -\text{NCO}}{\text{Equivalents of } -\text{OH}}$$

is within the range 2/1–1.3/1.

4,486,509

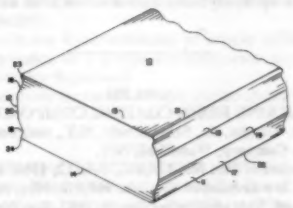
ROLLING INGOT

Jorge B. Deschapelles, Ravenswood, and Mark J. Haiar, Washington, both of W. Va., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Feb. 12, 1982, Ser. No. 348,393

Int. Cl.³ B22D *7/00*

U.S. Cl. 428—582 **3 Claims**



1. An elongated DC cast aluminum ingot having a generally rectangular cross-section and having first and second opposed narrow longitudinal faces and first and second opposed broad longitudinal faces, with the broad faces, and being considerably wider than the narrow faces, and being suitable for rolling into sheet or plate products, the improvement comprising:

said first and second broad longitudinal faces being relatively flat;

said narrow longitudinal faces each having an upper and a lower section and an intermediate surface, and being provided with elongated recesses extending along the lengths of said upper and lower sections of the narrow longitudinal faces and with elongated land areas at said intermediate surfaces between the elongated recesses, the ingot width at the land areas being greater than the ingot width at the intersections of the broad and the narrow longitudinal faces of the ingot.

4,486,510

METHOD OF MANUFACTURING TUNER CHASSIS

Isao Tanimoto, Kakuta; Tsuneo Yamada, and Katsuhisa Yamada, both of Soma, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1980, Ser. No. 213,651

Claims priority, application Japan, Jan. 24, 1980, 55-7042

Int. Cl.³ B05D *3/10*

U.S. Cl. 428—598 **8 Claims**

1. A method of manufacturing a tuner chassis having concentrations of solder in joints thereof, comprising the steps of:

assembling shield plates in a housing to obtain a chassis assembly;

dipping said chassis assembly in a molten solder bath for

providing the surfaces of said chassis assembly with solder plating;

dipping said chassis assembly provided with said solder plating in a bath of oil heated to a temperature at least as

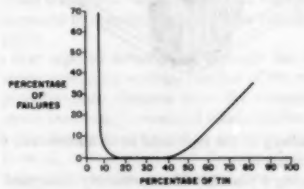
high as the melting temperature of said solder and then raising said chassis assembly from said bath of oil to cause solder to flow towards joints of said chassis assembly; and removing oil from said chassis assembly after cooling thereof.

4,486,511

SOLDER COMPOSITION FOR THIN COATINGS

Yung-Shih Chen, San Jose; Jagdish G. Belani, Cupertino, and Vijay Sajja, Sunnyvale, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 27, 1983, Ser. No. 508,376
Int. Cl.³ H02B *1/04*; H05K *3/28*
U.S. Cl. 428—620 **5 Claims**



1. A solder composition for use on integrated circuit lead containing a base metal which can form intermetallic compositions with the solder, the solder composition consisting of ten to forty percent (10–40%) tin with the remainder being lead, so as to avoid serious degradation of the solderability characteristic thereof due to the formed intermetallics.

4,486,512

RADIOACTIVE WASTE SEALING CONTAINER

Seiichi Tozawa, Ibaraki; Seii Sugimoto, Saitama, and Toshio Kitamura, Tokyo, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 465,415
Claims priority, application Japan, Feb. 10, 1982, 57-18813; May 25, 1982, 57-87351
Int. Cl.³ C25D *3/04*
U.S. Cl. 428—623 **12 Claims**

1. A radioactive waste sealing container characterized in that a foundation coating selected from the group consisting of zinc, cadmium and a zinc-aluminum alloy is applied over a steel base forming said container, an organic synthetic resin paint containing a metal phosphate is coated over said foundation coating, and at least one of an acryl resin paint, epoxy resin paint and polyurethane paint is coated over said organic synthetic resin paint.

4,486,513

PROCESS FOR PRODUCING RHODIUM-PLATED ARTICLE WITH BLACK COLOR AND WEAR RESISTANCE

Masayoshi Mashiko, Tokyo, and Keijiro Suzuki, Hitachi, both of Japan, assignors to Nippon Mining Co., Ltd. and Nippon Metal Plating Co., Ltd., both of Tokyo, Japan

Filed Mar. 24, 1982, Ser. No. 361,551
Claims priority, application Japan, Mar. 30, 1981, 56-045522
Int. Cl.³ C25D *11/34*
U.S. Cl. 428—670 **8 Claims**

1. A process for improving the wear resistance and enhancing the black color of a black rhodium-plated article which comprises subjecting a black rhodium-plated article to anodic electrolysis wherein the anodic electrolysis is carried out in a bath comprising one or more ingredients selected from the group consisting of:

organic acids selected from the group consisting of citric acid, glutamic acid, tartaric acid, acetic acid, stearic acid, lactic acid, succinic acid, sulfamic acid and salts thereof; inorganic acids selected from the group consisting of pyrophosphoric acid, phosphoric acid, carbonic acid, cyanic acid, boric acid, silicic acid and salts thereof, methyl alcohol, ethyl alcohol, ethylene glycol, benzylamine, cyclohexane, EDTA, sodium saccharinate, polyacrylamide, polyethylene imine, triethanolamine and ammonia water;

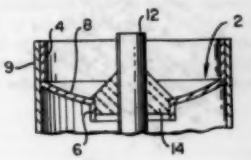
with a direct current of a current density of 0.004–20 A/dm^2 and a bath temperature for 20°–60° C. for 3–60 minutes.

4,486,514

HERMETICALLY SEALED GALVANIC CELL HAVING SAFETY VENT CONSTRUCTION

Earl J. Chaney, Jr., Medina, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 30, 1984, Ser. No. 595,365
Int. Cl.³ H01M *2/12*
U.S. Cl. 429—56 **12 Claims**



1. A galvanic cell comprised of a housing, said housing comprising a first portion having at least one aperture therethrough and extending about said at least one aperture, and a layer of glass or ceramic material disposed within said at least one aperture and bonded to said first portion of said housing so as to hermetically seal said at least one aperture; characterized in that said first portion of said housing is inwardly depressed and flexible such that when the internal pressure of said cell exceeds a predetermined limit said inwardly depressed first portion of said housing will flex outward thereby fracturing the hermetic seal and providing a vent passage from the cell.

4,486,515

STORAGE BATTERY ELECTROLYTE LEAK AND OVER-REPLENISHMENT PREVENTING DEVICE

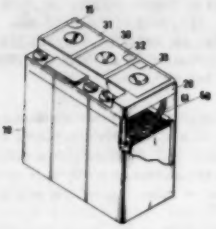
Jen-Tsair Chern, 1, Shan Tzu Ting, Chia I City, Taiwan (600)

Filed Dec. 30, 1983, Ser. No. 566,974
Int. Cl.³ H01M *2/12*, *2/36*
U.S. Cl. 429—72 **7 Claims**

1. A new storage battery electrolyte leak and over-replenishment preventing device characterized by comprising:

a base cover with a ledge providing a mounting surface for filling holes very close to the case joint, and separate

troughs corresponding to the cells located behind the ledge, sealed with the upper cover, and having four protrudent tubes in two opposite corners on the reverse of each trough;



an upper cover made in three integrated leak-proof plates for sealing the three troughs, having conical recesses in the center of the plates, and having vent holes at the top of the conical recesses;

U conduits, two each installed diagonally on the four protrudent tubes of each trough.

4,486,516

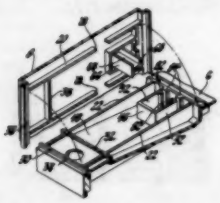
LOW SILHOUETTE VENTING SYSTEM FOR ELECTRIC STORAGE BATTERY

David T. Poe, Yorktown, Ind., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 437,312, Oct. 28, 1982, abandoned. This application Mar. 19, 1984, Ser. No. 591,108

Int. Cl.³ H01M *2/12*

U.S. Cl. 429—82 **17 Claims**



1. An electric storage battery comprising a case for housing the battery's active elements, a cover secured to said case and a horizontal-type vent system formed in said cover for relieving gases from the innards of the battery while inhibiting electrolyte escape therefrom wherein said vent system comprises:

an electrolyte drainage aperture for refluxing electrolyte to said innards;

an exhaust port for passing said gases to the ambient;

an antechamber adjacent said exhaust port, said antechamber being defined in part by a canted floor sloping downwardly from said port in a first direction toward a sump;

a sump at substantially the low point of said canted floor, said sump being defined in part by an inclined floor lying beneath said canted floor and sloping downwardly toward said aperture in a direction substantially different than said first direction;

partition means extending from and above said inclined and canted floors, said partition means further defining said sump and separating it from said antechamber and said innards; and

a substantially vertical slot in said partition means at substantially said low point of said canted floor for providing flow communication between said sump and said antechamber, said slot being sufficiently narrow as to permit egress of gas from said sump and regress of electrolyte to said sump but inhibit egress of electrolyte from said sump;

whereby any electrolyte invading said sump from said innards must first travel upwardly in one direction along said inclined floor, traverse said slot, and then travel upwardly along said canted floor in a substantially different direction before sufficiently nearing said exhaust port to permit possible escape therethrough.

4,486,517

WET-CELL STORAGE BATTERY

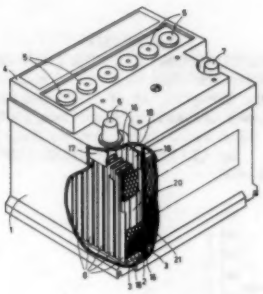
Ulrich Bender, Siegen, Fed. Rep. of Germany, assignor to Firma Emil Bender, Siegen, Fed. Rep. of Germany

Filed Oct. 18, 1983, Ser. No. 543,124

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1982, 3238485

Int. Cl.³ H01M *6/10*

U.S. Cl. 429—149 **11 Claims**



1. A storage battery of the type used in an automotive vehicle, the battery comprising:

a housing forming a plurality of transversely elongated and upright cells;

respective plus sets and minus sets of U-section electrode elements interleaved with each other in each cell, each element being unitarily formed with

an imperforate sheet-metal back having a pair of opposite edges,

respective expanded sheet-metal arms extending from the edges generally perpendicular to the back, the back having a horizontal width that is a fraction of the horizontal width of the arms, and

an imperforate connection tab projecting upward from the back; and

respective plus and minus bus bars in each of the compartments connected to the tabs of the respective electrode sets.

4,486,518

DUPLICATING FILM MASK WITH RADIATION ABSORBING BENZOPHENONE IN PROCESSED POSITIVE-WORKING RADIATION SENSITIVE LAYER ON TRANSPARENT SUBSTRATE

Jerome Kesselman, Yonkers; James Shelnut, Mahopac, and Alan Wilkes, Brewster, all of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Continuation of Ser. No. 236,400, Feb. 20, 1981, abandoned. This application Sep. 21, 1982, Ser. No. 420,766

Int. Cl.³ G03F *1/00*; G03C *3/00, 1/78*

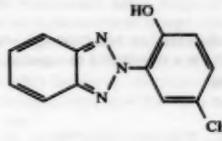
U.S. Cl. 430—5 **2 Claims**

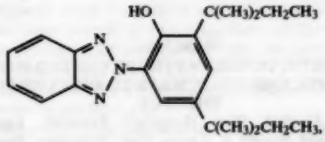
1. A negative or positive duplicating film, useful as a mask in the preparation of lithographic printing plates, wherein the duplicating film to be processed comprises a first layer com-

prising a non-silver containing positive working, radiation-sensitive, essentially alkali-insoluble composition comprising:

(i) from about 10 to 40% by weight of at least one positive-working, radiation-sensitive, essentially alkali-insoluble component,

(ii) from about 4 to 10% by weight of at least one radiation absorbing component selected from the group consisting of





(iii) from about 30 to 85% by weight of (ii) at least one alkali-soluble binder, a surface of said first layer forming an interface with a second layer which comprises a substrate transparent to radiation; said duplicating film being prepared by treating said first layer utilizing the following steps:

(a) first exposed to radiation through the transparent substrate whereby a volume element of the composition, to a predetermined distance from the composition first substrate interface, is rendered alkali-soluble,

(b) then imagewise exposed to radiation through a mask in front of, or in contact with the second surface of the first layer whereby the thus exposed areas are rendered alkali-soluble, and

(c) treated with an alkali developer to remove the imagewise exposed areas of the radiation-sensitive composition which were exposed through both the transparent substrate and the mask, while the areas not exposed provide opaque areas.

4,486,519

BISAZO COMPOUNDS AND ELECTROPHOTOGRAPHIC PHOTOCONDUCTORS COMPRISING THE BISAZO COMPOUNDS

Masaomi Sasaki, Susono, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

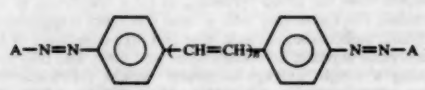
Filed Jun. 1, 1983, Ser. No. 500,051

Claims priority, application Japan, Jun. 18, 1982, 57-103996; Jun. 18, 1982, 57-103997; Jan. 17, 1983, 58-5524; Jan. 26, 1983, 58-11148

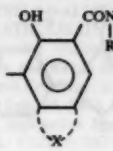
Int. Cl.³ G03G 5/06

U.S. Cl. 430—58 **15 Claims**

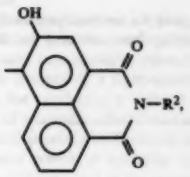
1. A bisazo compound of the general formula:



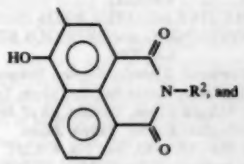
where n is an integer of 2 or 3, and when n=2, substituent A is selected from the group consisting of



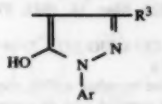
(a)



(b)



(c)



(d)

and when n=3, A is selected from the group consisting of the above substituents (a), (b) and (c), wherein R^1 is hydrogen, an alkyl group, an unsubstituted or substituted phenyl group; X is an unsubstituted or substituted cyclic hydrocarbon group, or an unsubstituted or substituted heterocyclic group; Y is an unsubstituted or substituted cyclic hydrocarbon group, an unsubstituted or substituted heterocyclic group, or

(in which R^4 is an unsubstituted or substituted cyclic hydrocarbon group, an unsubstituted or substituted heterocyclic group, an unsubstituted or substituted styryl group; R^5 is hydrogen, an alkyl group, an unsubstituted or substituted phenyl group; or R^4 and R^5 can form a ring in combination with carbon atoms bonded to R^4 and R^5); R^2 is an unsubstituted or substituted hydrocarbon group; R^3 is an alkyl group or a carboxyl group or an ester thereof; and Ar is an unsubstituted or substituted cyclic hydrocarbon group.

4,486,520

PHOTOCONDUCTIVE DEVICES CONTAINING NOVEL SQUARAINE COMPOSITIONS

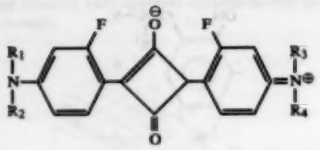
John F. Yanus, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 5, 1983, Ser. No. 558,224

Int. Cl.³ G03G 5/14

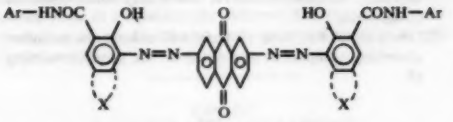
U.S. Cl. 430—59 **43 Claims**

1. Photoresponsive fluorinated squaraine compositions of the following formulas:



wherein R_1, R_2, R_3, and R_4, are independently selected from alkyl groups, containing from about 1 to about 20 carbon atoms.

(I)



wherein X is a substituted or unsubstituted aromatic ring or hetero ring, and Ar is a substituted or unsubstituted aromatic ring or hetero ring.

4,486,521

PHOTOCONDUCTIVE MEMBER WITH DOPED AND OXYGEN CONTAINING AMORPHOUS SILICON LAYERS

Teruo Misumi, Kawasaki; Kyosuke Ogawa, Sakurashia; Junichiro Kanbe, Yokohama; Keishi Saitoh, Tokyo; Yoichi Osato, Yokohama, and Shigeru Shirai, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1983, Ser. No. 475,251

Claims priority, application Japan, Mar. 16, 1982, 57-42222; Mar. 16, 1982, 57-42223; Mar. 16, 1982, 57-42224; Mar. 16, 1982, 57-42225

Int. Cl.³ G03G *5/14, 5/04*

U.S. Cl. 430—65 **16 Claims**

1. A photoconductive member which comprises a support for a photoconductive member and an amorphous layer containing an amorphous material comprising silicon atom as a matrix and at least one of a hydrogen and a halogen atom and having photoconductivity, said amorphous layer comprising a first layer region containing oxygen atom as a constituent atom, the oxygen being distributed continuously in the direction of the layer thickness T_O, of said first layer region and enriched at the support side, and a second layer region containing an atom of group III of the periodic table as a constituent atom, said first layer region being internally present at the support side in the amorphous layer, and the layer thickness T_B of said second layer region is 50 microns or less and a layer thickness T, which is 0.5 microns or more, derived by subtracting T_B from the layer thickness of the amorphous layer and satisfying the relation, $T_B/T \leq 1$, and wherein $T_B = T_O$, $T_B > T_O$, or $T_O < T_B$.

4,486,522

TETRAZONIUM SALT, NOVEL DISAZO COMPOUND, METHOD OF PREPARING SAME AND ELECTROPHOTOGRAPHIC ELEMENT USING SAME

Mitsuru Hashimoto, Numazu, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 12, 1983, Ser. No. 493,913

Claims priority, application Japan, May 20, 1982, 57-86190; Aug. 19, 1982, 57-142621

Int. Cl.³ G03G *5/06, 5/14*

U.S. Cl. 430—79 **20 Claims**

1. A multilayer type electrophotographic element comprising a charge carrier generating layer and a charge transfer layer formed on an electrically conductive substrate, wherein said charge carrier generating layer contains a disazo compound having the general formula (I):

4,486,523

MAGNETIC TONER PARTICLES COATED WITH OPAQUE POLYMER PARTICLES TO OBSCURE COLOR THEREOF

Lewis K. Hosfeld, West Hempfield Township, Lancaster County, and Ronald S. Lenox, East Hempfield Township, Lancaster County, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Nov. 1, 1982, Ser. No. 438,284

Int. Cl.³ G03G *9/08*

U.S. Cl. 430—106.6 **28 Claims**

1. A magnetic toner in which the color of the magnetic material is substantially obscured, said toner comprising:

magnetic particles,

a coating material for said magnetic particles, and

optionally, a binder, said coating material comprising essentially opaque polymeric particles which have an affinity for said magnetic particles, said polymeric particles surrounding essentially each of said magnetic particles and substantially obscuring the dark color thereof.

4,486,524

TONER FOR DEVELOPING ELECTROSTATIC LATENT IMAGES COMPRISING A RESIN HAVING SPECIFIED MOLECULAR WEIGHT PARAMETERS

Yasuyuki Fujisaki, Ibaraki; Minoru Takahashi, Ujishi; Hiroshi Ogawara, Nagaokakyo; Hirozo Funaki, Osaka; Ryubun Seimaya, Hino; Yutaka Yamada, Tanashi; Makoto Tomono, Hino, and Noriyoshi Tarumi, Tama, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 211,894, Dec. 1, 1980, abandoned, which is a continuation of Ser. No. 789,941, Apr. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 566,227, Apr. 9, 1975, abandoned. This application Nov. 13, 1981, Ser. No. 321,331

Claims priority, application Japan, Apr. 10, 1974, 49-41223

Int. Cl.³ G03G *9/08*

U.S. Cl. 430—109 **12 Claims**

1. A toner for developing electrostatic latent images which comprises a resin, said resin containing at least 60% by weight, based on the weight of said resin, of at least one polymer selected from the group consisting of (a) a copolymer of an aromatic vinyl monomer with at least one other α-methylene aliphatic monocarboxylic acid ester and (b) a copolymer of 62 -methylene aliphatic monocarboxylic acid ester, said polymer having a weight average molecular weight (Mw)/number average molecular weight (Mn) ratio of from 3.5 to 40 wherein the number average molecular weight (Mn) is between about 2,000 and about 30,000.

4,486,525

MULTIPLE COPYING PROCESS WITH IMPROVED IMAGE RETENTION

Toshihide Yamaoka, Mitaka, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Nov. 12, 1981, Ser. No. 320,522
Claims priority, application Japan, Nov. 12, 1980, 55/158088
Int. Cl.³ G03G *13/09*
U.S. Cl. 430—122 4 Claims

1. A multiple copying process, comprising the steps of:

producing an electrostatic latent image of an original to be duplicated on a electrostatic charge retentive member;

providing a magnetic brush developing unit including a non-magnetic sleeve and a permanent magnet assembly disposed within the sleeve, the sleeve including an electrically-insulating surface layer having a resistivity of 10^8 to 10^{12} ohm cm;

developing the latent image to form a toner image by said magnetic brush developing unit using a two-component developer containing a low-resistance carrier with a volume resistivity of less than 10^{10} ohm cm and higher than 10^8 ohm cm and a toner;

transferring the thus developed toner image onto an image receiving member; and

repeating said developing and said transferring for the same and single electrostatic latent image once formed on the electrostatic charge retentive member to form a desired number of copies.

4,486,526

LITHOGRAPHIC PLATE AND PHOTORESIST HAVING PHOTOSENSITIVE LAYERS OF DIAZO AND CINNAMOYLATED PHENOL-BLOCKED ISOCYANATE POLYURETHANE MATERIALS

Daniel C. Thomas, Wheaton, Ill., and Jack L. Sorkin, University Heights, Ohio, assignors to Richardson Graphics Company, Des Plaines, Ill.

Continuation of Ser. No. 352,071, Feb. 25, 1982, abandoned, which is a continuation of Ser. No. 198,363, Oct. 20, 1980, Pat. No. 4,330,611, which is a continuation of Ser. No. 000,168, Jan. 2, 1979, abandoned, which is a continuation of Ser. No. 870,197, Jan. 17, 1978, Pat. No. 4,133,685, which is a continuation of Ser. No. 755,932, Dec. 30, 1976, abandoned, which is a continuation of Ser. No. 541,455, Jan. 16, 1975, abandoned, which is a continuation-in-part of Ser. No. 435,340, Jan. 21, 1974, abandoned, which is a continuation of Ser. No. 829,149, May 29, 1969, Pat. No. 3,808,004. This application Jun. 9, 1983, Ser. No. 501,750
Int. Cl.³ G03C *1/52, 1/68;* G03F *7/08*
U.S. Cl. 430—156 2 Claims

1. A high-speed presensitized plate for lithography or photoresist etching, including in combination a plate base, a sub-base coating over said plate base, a layer of a light sensitive diazo resin condensation product of an aldehyde and a diazonium compound over the sub-base coating and a cinnamate photopolymer coating over said diazo resin layer, wherein the photopolymer coating contains phenol-blocked isocyanate polyurethane cinnamate polymer.

2. A method of converting an unlacquered negative-working diazo resin lithographic or photoresist plate wherein the diazo resin is a light sensitive condensation product of an aldehyde and a diazonium compound to a high-speed negative-working lithographic or photoresist plate, which method comprises coating the diazo resin with a cinnamate photopolymer coating wherein said photopolymer coating comprises phenol-blocked isocyanate polyurethane cinnamate photopolymer, said method including unblocking said photopolymer by heating same.

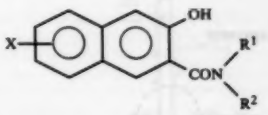
4,486,527

THERMO-DEVELOPABLE TYPE DIAZO COPYING MATERIAL WITH 2-NAPHTHOL COUPLER HAVING LONG ALIPHATIC CHAIN AMIDE SUBSTITUTION

Norio Kurisu, Numazu; Tsutomu Matsuda; Masaru Shimada, both of Shizuoka, and Keishi Kubo, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 14, 1983, Ser. No. 466,279
Claims priority, application Japan, Feb. 19, 1982, 57-25741
Int. Cl.³ G03C *1/58, 1/60;* G01D *15/10*
U.S. Cl. 430—158 19 Claims

1. A thermo-developable diazo copying material comprising a substrate and a heat-sensitive recording layer superposed on said substrate, said heat-sensitive recording layer consisting essentially of an amount of a light-sensitive diazonium compound effective for producing a colored image on said material, an amount of a coupler effective to react with said diazonium compound to produce said colored image and a heat-fusible color assistant which is insoluble or slightly soluble in water and has a melting point in the range of 50° C. to 150° C., said color assistant being present in an amount in the range of from 0.1 to 100 parts by weight per 1 part by weight of said diazonium compound, said recording layer being a pair of superposed sublayers, one of said sublayers containing said diazonium compound and the other of said sublayers containing said coupler, and said color assistant being present in admixture with at least one of said diazonium compound or said color assistant in at least one of said sublayers, said coupler comprising at least one compound of the formula:



wherein X is hydrogen, halogen, alkyl having 1 to 4 carbon atoms or alkoxy having 1 to 4 carbon atoms, R^1 is alkyl having 10 to 25 carbon atoms, and R^2 is hydrogen or alkyl having 1 to 30 carbon atoms.

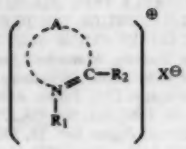
4,486,528

COLOR DIFFUSION TRANSFER PHOTOGRAPHIC ELEMENT WITH REDOX DYE RELEASERS

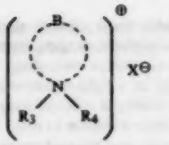
Masakazu Morigaki, and Motohiko Tsubota, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 276,299, Jun. 22, 1981, abandoned. This application Feb. 28, 1983, Ser. No. 470,355
Claims priority, application Japan, Jun. 20, 1980, 55-83528
Int. Cl.³ G03C *5/54, 7/00, 1/40*
U.S. Cl. 430—218 29 Claims

1. In a color diffusion transfer photographic element which comprises (a) a light sensitive element containing at least one light sensitive silver halide emulsion layer associated with a dye releasing redox compound, (b) a dye image receiving element and (c) an alkaline processing composition element, the improvement which comprises said alkaline processing composition element containing (1) a developing agent having one-electron oxidation reduction potential in the range of from −80 mV to −200 mV with respect to a saturated calomel electrode at a pH of 11.0, wherein said developing agent is a 1-phenyl 3-pyrazolidinone or an aminophenol and (2) at least one compound selected from the group consisting of compounds represented by the following general formulae (I) or (II)

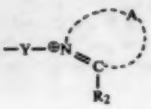


(I)

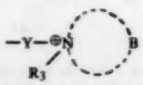


(II)

wherein A and B each represents a non-metallic atomic group necessary to form a 5-, 6- or 7-membered ring; R_1, R_3 and R_4 each represents an alkyl group, a substituted alkyl group, an alkenyl group, an aryl group or a substituted aryl group, wherein R_1 may further represent



and R_4 may further represent



wherein Y represents a divalent group; R_2 represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, an alkoxy group, an aryloxy group, an alkylthio group or an arylthio group, with the proviso that R_2 is not a methyl group when the compound represented by general formula (I) is a pyridinium salt; and $X^{\ominus}$ represents an anion, with the proviso that $X^{\ominus}$ is not present when an inner salt is formed, wherein R_3 further may connect with the ring formed with B to for a biscyclo ring system, and wherein the compounds represented by formula (I) or (II) are used in an amount of from 1×10^{-6} g to 1 g per kg of an alkaline processing composition.

4,486,529

DIALO PRINTING PLATE MADE FROM LASER

William Jeffers, Fair Haven; Douglas Seeley, High Bridge, both of N.J.; Raimund J. Fanst, Wiesbaden, Fed. Rep. of Germany, and Shuchen Liu, New Providence, N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 694,693, Jun. 10, 1976, abandoned. This application Dec. 7, 1978, Ser. No. 967,502

Int. Cl.³ G03F *7/08*

U.S. Cl. 430—300 **2 Claims**

1. In a photochemical process for the preparation of printing plates wherein a printing plate comprising a photosensitive composition coated on a support is exposed to a pattern of laser light, the intensity of which light is modulated in accordance with an input source of information and said printing plate is subsequently developed by removal from said support of that portion of the photosensitive coating composition which is not exposed to said pattern of laser light,

the improvement comprising utilizing a pattern of laser light generated by a laser at a wavelength greater than about 450 nm and utilizing as a photosensitive composition a negative-working condensate of a para-aminobenzene diazonium compound, said compound being present in a quantity of at least 25% of the total coating weight, and in intimate admixture with a colorant capable of absorbing light in the spectral range between 450 and 550 nm, said colorant selectively sensitizing said condensate to said laser light, and being selected from the group consisting of azo, triarylmethine, xanthene and methine compounds.

4,486,530

IMMUNOMETRIC ASSAYS USING MONOCLONAL ANTIBODIES

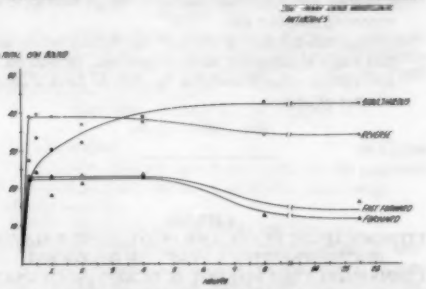
Gary S. David, La Jolla, and Howard E. Greene, Carlsbad, both of Calif., assignors to Hybritech Incorporated, San Diego, Calif.

Continuation-in-part of Ser. No. 175,133, Aug. 4, 1980, Pat. No. 4,376,110. This application Jun. 24, 1981, Ser. No. 323,498

The portion of the term of this patent subsequent to Mar. 8, 2000, has been disclaimed.

Int. Cl.³ G01N *33/54, 33/56*

U.S. Cl. 435—7 **33 Claims**



1. In an immunometric assay process to determine the presence or concentration of an antigenic substance in a fluid sample comprising forming a ternary complex of the antigenic substance, a first antibody and a second antibody bound to the antigen at a difference site than the first antibody by contacting the sample with said first and second antibodies, the improvement comprising employing a measured amount of a monoclonal antibody having an affinity for the antigenic substance of at least about 10^8 liters/mole for each of said first and second antibodies.

4,486,531

METHOD AND REAGENT FOR THE DETERMINATION OF β-LIPOPROTEIN

Joachim Ziegenhorn, Starnberg; Knut Bartl, Wilzhofen, and Max Brandhuber, Weilheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Continuation of Ser. No. 233,345, Feb. 11, 1981, abandoned. This application May 4, 1983, Ser. No. 489,139

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007764

Int. Cl.³ G01N *33/68, 33/92*; C12Q *1/44, 1/60*

U.S. Cl. 435—19 **23 Claims**

1. A method for the direct turbidimetric determination of beta-lipoproteins (LDL) in body fluids, in the presence of pre-beta-lipoproteins (VLDL) and alpha-lipoproteins (HDL) consisting essentially of adding a test sample, to a mixture of 0.005% to 0.5% of a polyanion and 1 to 35 grams/l of a chelating agent for a divalent cation that is different than the polyanion, said mixture and sample being at a ph value of from 7 to 9; adding 0.01 to 0.3 m of the divalent cation to cause turbidity to form and, thereafter, measuring the turbidity formed to determine the quality of the LDL.

4,486,532

PROCESS FOR PREPARING L-MALIC ACID

Ichiro Chibata, Suita; Tetsuya Tosa, Kyoto; Tadashi Sato, and Kozo Yamamoto, both of Takatsuki, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Jun. 29, 1976, Ser. No. 700,999
Claims priority, application Japan, Jul. 11, 1975, 50-85672
The portion of the term of this patent subsequent to Nov. 25, 1992, has been disclaimed.
Int. Cl.³ C12P 7/46
U.S. Cl. 435—145 23 Claims

1. A process for preparing L-malic acid which comprises the steps of polymerizing at least one acryl or allyl monomer in an aqueous suspension containing a fumarase-producing microorganism to produce an immobilized fumarase-producing micro-organism, contacting the immobilized fumarase-producing microorganism with at least one member of the group consisting of bile acids or salts thereof, and then subjecting the immobilized fumarase-producing microorganism to enzymatic reaction with fumaric acid or a salt thereof.

4,486,533

FILAMENTOUS FUNGI FUNCTIONAL REPLICATING EXTRACHROMOSOMAL ELEMENT

Alan M. Lambowitz, St. Louis, Mo., assignor to St. Louis University, St. Louis, Mo.

Continuation-in-part of Ser. No. 414,131, Sep. 2, 1982, abandoned, which is a continuation-in-part of Ser. No. 395,884, Jul. 7, 1982, abandoned. This application Jan. 24, 1983, Ser. No. 460,684
Int. Cl.³ C12N 15/00, 1/14, 1/00; C12P 21/00, 21/02, 19/34
U.S. Cl. 435—172.3 9 Claims

1. A method for producing autonomously replicating vectors for use in Neurospora which comprises:

isolating mitochondria having autonomously replicating plasmid DNAs from Neurospora;

linearizing said plasmid DNAs and inserting said plasmid DNAs into a cloning vector to produce a hybrid cloning plasmid and introducing said hybrid cloning plasmid into an amplifying host to provide a modified host;

growing said modified host for said cloning vector to clone said mitochondrial plasmid DNA and isolating said hybrid cloning plasmids;

introducing at least a portion of said cloning plasmid containing at least a portion of said linearized mitochondrial plasmid into a Neurospora and selecting for a Neurospora in which said portion is stably maintained outside of the mitochondria.

4,486,534

PROCESS FOR THE PREPARATION OF IMMUNOLOGICALLY ACTIVE ENZYME TAGGED CONJUGATES

Winfried Albert, Pähl, and Helmut Lenz, Tutzing, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 145,902, May 2, 1980, abandoned. This application May 19, 1982, Ser. No. 379,794
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2923139
Int. Cl.³ G01N 33/54; C12N 9/96
U.S. Cl. 435—188 10 Claims

1. In a process for the preparation of immunologically active enzyme-tagged conjugates, the process being of the type wherein an antigen or haptene is covalently linked to a tagging enzyme molecule to form a mixture of immunologically active and inactive conjugates, whereafter the mixture is subjected to separation processes the improvement comprising

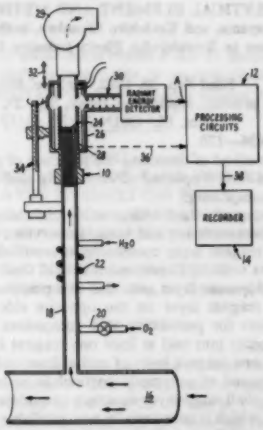
said separation process being based on chemical separation techniques and including the steps of placing a solution of said mixture of immunologically active and inactive conjugates in contact with an insoluble substance able to form a non-immunological insoluble complex reversibly with said active and said inactive conjugates, said reversible complex being most strongly formed with said active conjugates; separating the insoluble substance from said solution; and eluting the less strongly held active conjugates from the insoluble substance with a desorbent, thereby to separate the inactive conjugates from the active conjugates.

4,486,535

METHOD AND APPARATUS FOR MEASURING PARTICLE SIZE

William L. Dimpfl, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 7, 1982, Ser. No. 366,236
Int. Cl.³ G01N 15/02
U.S. Cl. 436—2 2 Claims



1. A method for measuring the size distribution of carbonaceous particles entrained in a gas comprising the steps of:

passing the entraining gas through a heated zone to induce incandescent burning of the particles, whereby the particles entrained in the gas are gradually consumed as the particles move through the heated zone;

detecting a portion of the electromagnetic energy emitted by the burning, entrained particles at varying locations along the path of flow of the gas through the heated zone; and

producing an indication of the size distribution of the particles entrained in the gas responsive to the rate at which the detected electromagnetic energy varies with detection location along the path of flow.

4,486,536

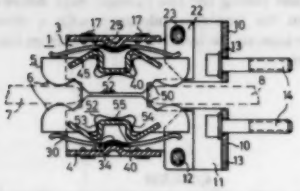
SPECIMEN SLIDE FOR OCCULT BLOOD TESTING

Josefina T. Baker, Cupertino; Paul J. Lawrence, Campbell, and Charles W. Townsley, San Jose, all of Calif., assignors to Smithkline Diagnostics, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 382,908, May 28, 1982, abandoned. This application Aug. 19, 1982, Ser. No. 409,753
Int. Cl.³ G01N 21/78, 33/72
U.S. Cl. 436—66 6 Claims

1. A method of testing for occult blood in gastric fluid which

comprises applying the gastric fluid to an unbuffered acid treated absorbent substrate containing guaiac as a reagent and



applying a buffered developing solution to said substrate and observing if the substrate is colored blue.

4,486,537

ANALYTICAL ELEMENT AND METHOD OF USE

Mikio Koyama, and Kenichiro Okaniwa, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1982, Ser. No. 419,931
Claims priority, application Japan, Sep. 29, 1981, 56-155788
Int. Cl.³ G01N *21/78, 33/52*
U.S. Cl. 436—170 16 Claims

15. A method of detecting the presence of a component in a biological fluid suspected of containing said component, said method comprising:

contacting said fluid with an analytical element comprising a light-transmissive and liquid-impervious support, at least one reagent layer containing at least one reagent which reacts with said component in said fluid and at least one development layer provided at a position on said at least one reagent layer on the opposite side to that of said support for permitting said component in said fluid to permeate into said at least one reagent layer, wherein at least one reagent layer of said at least one reagent layer is composed of polymeric particulate units, each having a core-shell multi-layer structure comprising a hydrophobic core which is substantially non-swellable when in contact with said fluid, and a hydrophilic outer shell, wherein the polymeric particulate units are bound to adjacent polymeric particulate units by mutual adhesion of the respective hydrophilic outer shells, said polymeric particulate units forming voids which substantially impede the development of a fluid sample in the lateral direction; and

determining the effect of said component on said reagent in said at least one reagent layer.

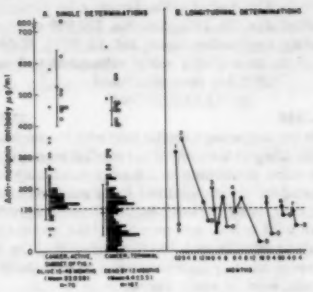
4,486,538

DETECTION OF MALIGNANT TUMOR CELLS

Samuel Bogoch, 46 E. 91st St., New York, N.Y. 10028

Continuation-in-part of Ser. No. 922,799, Jul. 7, 1978, Pat. No. 4,298,590, and a continuation-in-part of Ser. No. 553,075, Feb. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 550,432, Feb. 18, 1975, abandoned, Ser. No. 450,404, Mar. 12, 1974, abandoned, and Ser. No. 385,451, Aug. 3, 1973, abandoned.
This application Jun. 8, 1981, Ser. No. 271,645
Int. Cl.³ C12N *15/00*; G01N *33/54, 33/56*; A61K *39/395*
U.S. Cl. 436—503 21 Claims

1. A process for detecting the presence of cancerous or malignant tumor cells in a cell collection, said cells comprising a cancer RECOGNIN, comprising applying to said cell collection a specific monoclonal anti-cancer RECOGNIN antibody, which attaches to cancerous cells and can thereby be detected by visible or signal-emitting means attached to said antibody, said cancer RECOGNIN being derived from cancerous tumor tissue or cells, and characterized by forming a single line precipitate with its specific antibody in quantitative precipitin tests and Ouchterlony gel diffusion tests, being soluble in water and aqueous solutions having an acid or neutral pH, and insoluble at alkaline pH, having a spectrophotometric absorption peak wave length of 280μ and a molecular weight of from about



3,000 to about 25,000, and further characterized by having an amino acid residue composition characterized by high proportions of glutamic and aspartic acids and high ratios of glutamic and aspartic acids to histidine.

4,486,539

DETECTION OF MICROBIAL NUCLEIC ACIDS BY A ONE-STEP SANDWICH HYBRIDIZATION TEST

Tuula M. Ranki, and Soderlund Hans E., both of Espoo, Finland, assignors to Orioon Corporation Ltd., Finland

Filed Oct. 14, 1982, Ser. No. 434,182
Claims priority, application Finland, Oct. 16, 1981, 813251
Int. Cl.³ C12N *15/00*
U.S. Cl. 436—504 8 Claims

1. A method for identifying nucleic acids by a one-step sandwich hybridization test, said method comprising the steps of:

(a) rendering the nucleic acids in the sample to be identified single-stranded;

(b) allowing said single-stranded nucleic acids of the sample to hybridize simultaneously in a single step with a combination of at least one pair of nucleic acid reagents, said reagents having been purified, the first nucleic acid reagent of said pair comprising a single-stranded fragment of nucleic acid, having a nucleotide sequence of at least 10 bases, and being affixed to a solid carrier, the second nucleic acid reagent of said pair comprising a single-stranded fragment of nucleic acid, having a nucleotide sequence of at least 10 bases, and being labeled with a radioisotope, said first and second nucleic acid reagents being capable of forming hybrid molecules by complementary base pairing with given sequences of the sample nucleic acid to be identified, provided that the second nucleic acid reagent cannot hybridize with the first nucleic acid reagent;

(c) washing said solid carrier to substantially remove said label which is not incorporated in said hybrid molecule; and

(d) measuring said label on the washed solid carrier, whereby determining whether the sample contains the nucleic acid to be identified.

4,486,540

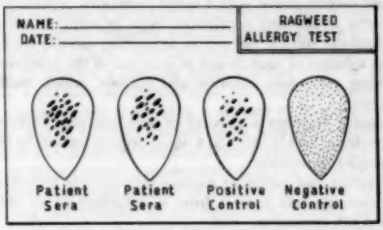
IDENTIFICATION OF REAGINS IN THE BLOOD SERUM OF ALLERGEN SENSITIZED VERTEBRATES

John H. Brewer, and Terry L. Foster, both of Abilene, Tex., assignors to Science Research Center, Inc., Abilene, Tex.

Continuation-in-part of Ser. No. 323,762, Nov. 23, 1981, abandoned, which is a division of Ser. No. 170,143, Jul. 18, 1980, Pat. No. 4,331,650. This application May 10, 1983, Ser. No. 493,413

Int. Cl.³ G01N *33/54*

U.S. Cl. 436—513 5 Claims



1. A method of determining the presence or absence of a reagin in the blood serum of a vertebrate sensitized by the allergen counterpart of said reagin, which comprises;

A. providing an extra-corporeal specimen of the blood serum suspected of containing the reagin;

B. providing an aqueous dispersion of solid, carrier particles having adsorbed thereon the immunological allergen homolog of the reagin;

C. admixing the blood specimen provided, with the aqueous dispersion; and

D. visually observing the admixture for an agglutination reaction;

wherein a positive agglutination reaction is indicative of the presence of the reagin and the absence of an agglutination reaction is indicative of the absence of the reagin and wherein the allergen adsorbed on the carrier particle is modified to form a surfactant complex, where said complex has the formula: Ⓐ X-Y wherein X represents a hydrophilic, polar moiety, Y represents a hydrophobic non-polar moiety and Ⓐ is a polar allergen molecule, and where X and Y are chemically bound together and the X-Y compound is complexed with the allergen such that the X moiety is oriented toward the polar allergen molecule and the Y moiety is oriented away from the polar allergen molecule.

4,486,541

PHOTOTROPIC GLASS WITH A REFRACTIVE INDEX OF AT LEAST 1.59

George Gliemeroth, Mainz-Finthen, and Uwe Eichhorn, Mainz-Mombach, both of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Continuation of Ser. No. 372,752, Apr. 28, 1982, abandoned. This application Dec. 8, 1983, Ser. No. 559,018

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3117000

Int. Cl.³ C03C *3/26, 3/08, 3/10*

U.S. Cl. 501—13 8 Claims

1. A phototropic glass which contains a carrier of phototropy precipitations containing silver and halogens characterized in that it has a refractive index of ≧1.59, an Abbe index of ≧40 and a density of ≦3.2 g/cm³, consisting essentially of, in weight percent:

(a)
SiO_2: 32–47
B_2O_3: 14.5–27
P_2O_5: 0–11

wherein SiO_2, $+B_2O_3+P_2O_5$ is 58.0–71.0 percent;

(b)
Al_2O_3: 0–0.4
ZrO_2: 1.5–10
La_2O_3: 0–23
Nb_2O_5: 0–2
Ta_2O_5: 0–18
WO_3: 0–1

wherein $Al_2O_3+ZrO_2+La_2O_3+Nb_2O_5+Ta_2O_5+WO_3$ is 2.0–25.0 percent;

(c)
MgO: 0–1
CaO: 0–6
SrO: 0–24

wherein the total of alkaline earth metal oxides is 2.0–24.0 percent;

(d)
PbO: 0.5–12
TiO_2: 0.5–8

wherein $La_2O_3+SrO+PbO+TiO_2+Nb_2O_5+ZrO_2+-WO_3+Ta_2O_5$ is 12–34 percent;

(e)
Li_2O: 0.5–6
Na_2O: 0–4
K_2O: 6–12

wherein the total of alkali metal oxides is 6.5–15 percent; and

(f) Ag_2O at least 0.05, copper oxide or another phototropic sensitizer between 0 and 0.1, and halogens at least 0.25 percent.

4,486,542

ENAMEL FRIT AND A ONE-BAKE TWO- AND MULTILAYER ENAMELLING PROCESS

Otto Krist, Overath, and Herbert Salzburg, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 21, 1983, Ser. No. 534,231

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1982, 3238097

Int. Cl.³ C03C *5/00*

U.S. Cl. 501—17 11 Claims

8. An enamel frit suitable for one-bake at least two layer enamelling surface-coated at least partly with a complexing agent having a solubility in water at 25° C. and at a pH-value of from 4 to 9 of greater tha about 0.05 g/l, with the exception of saccharides and their oxidation, reduction and modification products and polyethylene glycol containing up to 50 carbon atoms per molecule.

4,486,543

POLYCRYSTALLINE SHAPED BODY OF SILICON CARBIDE AND METHOD FOR ITS PRODUCTION

Gerhard Leimer, and Ernst Gugel, both of Bavarian, Fed. Rep. of Germany, assignors to Feldmühle Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 23, 1981, Ser. No. 324,323

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044162

Int. Cl.³ C04B *35/56*

U.S. Cl. 501—88 4 Claims

1. A polycrystalline body having a shape sufficiently complicated such that it cannot be produced by hot pressing and having a theoretical density of at least 98% of the theoretical density of silicon carbide, consisting of at least 92 weight percent of α-silicon carbide, β-silicon carbide, or mixtures thereof which is present in the form of a homogeneous texture with grains of maximal 10 μm, up to 3 weight percent of boron, a share of about 0.5 to 5 weight percent of a reducing agent selected from the group consisting of titanium, zirconium, hafnium, scandium, yttrium, lanthanum, and cerium, and mixtures thereof, and which exhibits a transverse rupture strength, determined by the four-point method, of at least 500 N/mm^2 up to 1,400 C., is essentially free of free carbon and prepared by pressureless sintering.

4,486,544

TITANIUM BORIDE BASED SINTERING COMPOSITION AND THE USE THEREOF IN THE MANUFACTURE OF SINTERED ARTICLES

Olivier De Pous, Chene-Bougeries, Switzerland; Dominique Richon, Gaillard, France, and Hans Novotny, Ernstbrunn, Australia, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed Aug. 27, 1982, Ser. No. 412,293

Claims priority, application Switzerland, Aug. 31, 1981, 5572/81

Int. Cl.³ C04B *35/58*

U.S. Cl. 501—96 11 Claims

1. A powder composition for pressureless sintering, consisting essentially of titanium boride and, as densifying additives, boron and titanium hydride in molar ratio 2:1, wherein said composition contains 2 to 10% of the densifying additives by weight.

4,486,545

SiO_2-CAO BASED LOW CUBICALLY EXPANSIVE FLAME-SPRAYING MATERIAL

Hiroyuki Sugimoto, Bizen; Kazuo Fukaya, Tama, and Yoji Koguchi, Tokyo, all of Japan, assignors to Shinagawa Refractories, Co., Ltd.; Nippon Kokan Kabushiki Kaisha and Nippon Sanso Kabushiki Kaisha, all of, Japan

Filed Mar. 22, 1983, Ser. No. 477,759

Claims priority, application Japan, Feb. 28, 1983, 58/27809; Apr. 2, 1983, 57/53755

Int. Cl.³ C04B *35/14, 35/16*

U.S. Cl. 501—123 1 Claim

1. A flame-spraying material essentially comprising 85 to 98% by weight of SiO_2, 2 to 15% by weight of CaO and 0.05 to 1.0% by weight of Li_2O.

4,486,546

PROCESS FOR PREPARING A HEAT RESISTANT SOFT COMPOSITE

Tadaki Murakami, Hyogo; Yasuhiko Ikeda, Sanda, and Isao Ishii, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1983, Ser. No. 533,793

Claims priority, application Japan, Sep. 30, 1982, 57-173562

Int. Cl.³ C04B *35/16*

U.S. Cl. 501—153 3 Claims

1. A process for preparing a heat resistant soft composite which comprises hot-pressing a mixture comprising talc powder and mica powder as major components and a bonding material composed of normal boric acid, boric acid anhydride and zinc oxide, at a temperature of from 160 to 200° C. under pressure of from 50 to 100 kg/cm² to form a composite, and subjecting the composite to heat treatment at a temperature of from 450 to 500° C.

4,486,547

INDIUM-CONTAINING DEHYDROGENATION CATALYST

Tamotsu Imai, Mount Prospect, Ill., and Chi-wen Hung, San Rafael, Calif., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 318,520, Nov. 5, 1981, abandoned. This application Jun. 2, 1983, Ser. No. 500,472

Int. Cl.³ B01J *27/04, 27/08, 27/10, 23/62*

U.S. Cl. 502—223 11 Claims

1. A catalyst composition comprising a platinum group component, a tin component, an indium component, an alkali or alkaline earth component and a porous support material wherein the atomic. ratio of indium to platinum group component is about 1.6, or higher.

4,486,548

ADSORBENT FOR THE EXTRACTION OF SUCROSE

Santi Kulprathipanja, Hoffman Estates, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 306,262, Sep. 28, 1981, Pat. No. 4,405,378, which is a continuation-in-part of Ser. No. 235,063, Feb. 17, 1981, abandoned. This application Sep. 8, 1983, Ser. No. 530,337

The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.

Int. Cl.³ C13D *3/12*

U.S. Cl. 502—404 9 Claims

1. A method for the manufacture of an adsorbent comprising activated carbon bound with a water permeable organic polymer binder comprising a cellulose ester or cellulose nitrate, said adsorbent suitable for use in separating sucrose from an aqueous solution of sucrose and at least one of the compounds comprising potassium chloride and betaine, which method comprises:

(a) mixing together a powder of said activated carbon, a powder of said binder and a liquid organic solvent to form a malleable mixture;

(b) forming said malleable mixture into discrete formations;

(c) removing said solvent from said formations to obtain hard dry formations; and

(d) breaking said hard dry formations into particles of desired sizes.

4,486,549

PROCESS FOR PREPARING AN AMINO GROUP-CONTAINING POLYACRYLONITRILE POLYMER

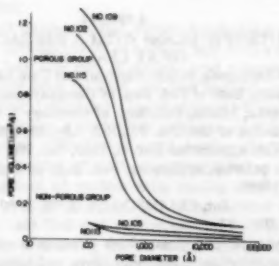
Kunio Matsumoto, Mishima; Rokuro Izumi, Shizuoka; Hideji Seijo, Shizuoka, and Hiroyuki Mizuguchi, Shizuoka, all of Japan, assignors to Toyo Jozo Company, Ltd., Shizuoka, Japan

Continuation-in-part of Ser. No. 103,731, Dec. 14, 1979, abandoned, which is a division of Ser. No. 10,997, Feb. 9, 1979, abandoned. This application Jun. 16, 1983, Ser. No. 505,376

Claims priority, application Japan, Feb. 17, 1978, 53-18001

Int. Cl.³ C08J *9/36*

U.S. Cl. 521—53 14 Claims



1. A process for producing an acrylonitrile polymer containing amino groups and having a porous structure containing micro-pores with an average size of from 50 to 2000 Å and pore volume of not less than 0.2 cm³/g, which comprises reducing an acrylonitrile polymer having said porous structure in an inert non-solvent for said polymer with lithium aluminum hydride.

4,486,550

STYRENIC FOAM AND PROCESS THEREFOR

Timothy W. Rhoads, Newark, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 24, 1984, Ser. No. 603,477
Int. Cl.[3] C08J 9/12, 9/14
U.S. Cl. 521—79 3 Claims

1. A process for the preparation of an alkenyl aromatic thermoplastic resinous elongate foam body having a machine direction and a transverse direction, the body defining a plurality of closed non-interconnecting gas containing primary cells therein the steps of the method consisting of heat plastifying an alkenyl aromatic synthetic resinous material, adding to the heat plastifying synthetic resinous material a volatile fluid foaming agent to provide a foaming agent resinous polymer mixture under a pressure sufficiently high that foaming is prevented, the foaming agent comprising a mixture of fluorocarbon and water, mixing the fluid foaming agent with the plastified resin to form an expandable resinous mixture, reducing the temperature of the mixture to a temperature such that when pressure is removed therefrom a foam of desirable quality is obtained, reducing the pressure of the mixture to thereby cause the mixture to form a foam of desired quality, the improvement which comprises incorporating within such expandable mixture corrosion reducing amount of a polyhydric alcohol wherein the hydroxyl groups of the polyhydric alcohol are attached to nonadjacent carbon atoms.

4,486,551

METHOD OF PREPARING A FLAME RETARDED POLYURETHANE USING A FLAME RETARDED HALOGENATED POLYOL

Stanley R. Sandler, Springfield, and Joseph M. Bohen, King of Prussia, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 294,699, Aug. 20, 1981, Pat. No. 4,393,248. This application Apr. 18, 1983, Ser. No. 472,828
Int. Cl.[3] C08G 18/14
U.S. Cl. 521—171 7 Claims

1. A flame retarded polyurethane prepared from a reaction mixture which comprises an isocyanate, a catalyst, a surfactant, water, a blowing agent, and 5 to 100 parts per hundred parts polyol by weight of a composition having the formula

$$R\left[(OCH_2CHCH_2)_aOCH_2\underset{\underset{OH}{|}}{C}HCH_2\underset{\underset{X'}{|}}{C}X_3\right]_b$$

wherein

a is an integer of 0 or 1, with the proviso that

when a is 0, b is an integer of 1 to 8, R is selected from the group consisting of a substituted linear or branched alkyl of 2 to 12 carbons and a substituted cyclic alkyl of 3 to 12 carbons, X is selected from the group consisting of F, Cl, and Br, and X' is selected from the group consisting of H, F, Cl, and Br, whereby the substituent is selected from the group consisting of at least 1 hydroxyl groups, and

when a is 1, b is an integer of 1 to 8, R is selected from the group consisting of hydrogen, a substituted linear or branched alkyl of 1 to 12 carbons and a substituted cyclic alkyl of 3 to 12 carbons, X is selected from the group consisting of F, Cl, and Br, and X' is selected from the group consisting of H, F, Cl, and Br, whereby the substituent is selected from the group consisting of at least 2 hydroxyl groups.

4,486,552

FOG-RESISTANT OLEFIN POLYMER FILMS

Debra H. Niemann, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 28, 1983, Ser. No. 470,116
Int. Cl.[3] C09K 3/18
U.S. Cl. 523—169 25 Claims

1. A fog-resistant packaging film prepared by producing a film of a formulation comprising

an ethylene polymer having incorported therein as an antifog agent a minor amount of

(1) an alkoxylated alkyl phenol along with a mixed mono-, di-, and/or tri-glyceride, or

(2) a polyoxyalkylene fatty acid ester, or

(3) a combination of (2) and any part of (1) above,

wherein said ethylene polymer is selected from the group comprising linear low density ethylene copolymer, blends of linear low density ethylene copolymer with low density branched polyethylene, and blends of linear low density ethylene copolymer with high density linear polyethylene.

4,486,553

FIRE-RETARDANT COMPOSITION AND METHOD FOR PRODUCING FIRE-RESISTANT LAYERS

Ludwig Wesch, Heidelberg, Fed. Rep. of Germany, assignor to Odenwald-chemie GmbH, Schonau, Fed. Rep. of Germany

Continuation of Ser. No. 165,263, Jul. 2, 1980, abandoned. This application Apr. 5, 1982, Ser. No. 365,501
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1980, 3009104
Int. Cl.[3] C08K 59/54
U.S. Cl. 523—179 20 Claims

1. A fire retardant composition for coating substrates, said composition containing foam-forming additives and/or foam-forming fillers, said additives and/or fillers being gas evolving and/or chain terminating, bound by an aqueous emulsion of (a) a hydrophilic epoxide resin capable of being emulsified with water, and (b) a curing agent.

4,486,554

PREPARATION OF ANIONIC AND CATIONIC POLYMERS FROM 2-OXAZOLINES

Michael J. Fazio, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 19, 1983, Ser. No. 524,719
Int. Cl.[3] C08F 8/32
U.S. Cl. 525—279 10 Claims

1. A process for preparing a polymer containing at least one pendant quaternary nitrogen atom wherein a 2-alkenyloxazoline or a 2-alkenyloxazine is subjected to vinyl polymerization and the resulting polymer comprising at least one pendant 2-oxazoline or 2-oxazine functionality is reacted with at least one tertiary amine salt under conditions such that said pendant 2oxazoline or 2-oxazine functionality is converted to a quaternary ammonium salt.

4,486,555

THERMOSETTING COATING COMPOSITION COMPRISING POLYMERIC CATALYST-II

Panagiotis I. Kordomenos, Mt. Clemens, and Kenneth R. Kurple, Anchorville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1982, Ser. No. 431,468
Int. Cl.[3] C08F 8/46; C08L 63/10, 33/10; C08K 11/00
U.S. Cl. 523—400 31 Claims

1. A novel, organic solvent based, thermosetting coating composition comprising:

A. epoxy ester resin of number average molecular weight (M_n) about 1000 to about 5000, being the reaction product of diepoxide with (i) dicarboxylic acid in chain extension reaction and (ii) monobasic fatty acid in chain terminating

esterification reaction, which chain extension and esterification reactions occur substantially simultaneously at a reaction temperature reaching at least about 135° C., wherein the epoxy functionality, dicarboxylic acid carboxyl functionality and fatty acid carboxyl functionality are employed in relative proportions of about 1:0.3–0.8:0.3–0.8 equivalents, respectively;

B. polyfunctional aminoplast crosslinking agent; and

C. polycarboxy functional polymeric catalyst of number average molecular weight (M_n) about 1,000–10,000 being substantially unreactive at room temperature with the epoxy ester resin and the polyfunctional aminoplast crosslinking agent, in an amount of about 2% to about 15% by weight of resin solids in the coating composition.

4,486,556

THERMOSETTING COATING COMPOSITION-III

Panagiotis I. Kordomenos, Mt. Clemens, and Kenneth R. Kurple, Anchorville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1982, Ser. No. 431,509

Int. Cl.³ C08G 59/14; C08L 63/10, 75/06

U.S. Cl. 523—400 **47 Claims**

1. A novel, organic solvent based, thermosetting coating composition comprising:

A. epoxy ester resin of number average molecular weight (M_n) about 900 to about 5000, being the reaction product of diepoxide with (i) diphenol in chain extension reaction, (ii) dicarboxylic acid in chain extension reaction, and (iii) monobasic fatty acid in chain terminating esterification reaction, which chain extension and esterification reactions occur substantially simultaneously at a reaction temperature reaching at least about 135° C., wherein the epoxy functionality, phenol functionality, dicarboxylic acid carboxyl functionality and monobasic fatty acid carboxyl functionality are employed in relative proportions ofabout 1:0.2–0.6:0.1–0.4:0.4–0.9 equivalents, respectively; and

B. blocked polyisocyanate crosslinking agent comprising at least one isocyanate group which has been blocked by reaction with an active hydrogen bearing blocking agent, said blocked polyisocyanate crosslinking agent being included in an amount such that upon deblocking of the blocked isocyanato group(s) thereof at the cure temperature of the composition said crosslinking agent will provide between about 0.5 and about 1.6 reactive isocyanato groups per reactive group on said epoxy ester resin.

4,486,557

ORGANIC POLYISOCYANATE-LIQUID AROMATIC EPOXIDE-LIGNIN ADHESIVE BINDER COMPOSITIONS

James M. Gaul, Exton, Pa., and Tinh Nguyen, Gaithersburg, Md., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 317,805, Nov. 11, 1981, abandoned. This application Nov. 25, 1983, Ser. No. 555,304

The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.

Int. Cl.³ C08L 63/00, 97/00

U.S. Cl. 523—446 **25 Claims**

1. An adhesive binder composition for the preparation of compression moldable lignocellulosic articles which comprises from about 20 to 95 percent by weight of an organic di- or polyisocyanate, from about 5 to 80 percent by weight of a liquid epoxide selected from liquid aromatic epoxides having one α epoxide group and aromatic or aliphatic based multifunctional epoxides having 2 or more α epoxide groups and between about 1.0 and 60 weight percent lignin based on the total composition as a diluent.

4,486,558

ELECTRICAL INSULATING POWDER FOR PROVIDING WIRE COATING

Curtis R. Guilbert, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 9, 1984, Ser. No. 578,774

Int. Cl.³ C08G 59/42

U.S. Cl. 523—466 **10 Claims**

1. A carboxy-functional adduct capable of acting as a curative for an epoxy resin comprising the reaction production of:

(a) the reaction product of an epoxy resin selected from an hydantoin diepoxide and a diglycidyl ether of bisphenol A and, per mole of said epoxy resin, 2 moles of a reactant selected from the group consisting of phenol and benzoic acid; and

(b) 2 moles per mole of said epoxy resin of trimellitic anhydride.

4,486,559

TONER COMPOSITION FOR THE DEVELOPMENT OF ELECTROSTATIC LATENT IMAGES AND A METHOD OF PREPARING THE SAME

Hideki Murata; Sadatugu Terada; Kiyoshi Tamaki; Tsuneo Wada, all of Hino; Akitoshi Matsubara, and Hiroyuki Takagiwa, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1981, Ser. No. 276,207

Claims priority, application Japan, Jul. 1, 1980, 55-90317

Int. Cl.³ C08K 3/04; C08F 255/02

U.S. Cl. 523—468 **28 Claims**

1. A toner composition for the development of electrostatic latent images which comprises a polymer obtained by polymerizing a polymerizable monomer or monomers in the presence of a chlorinated polyolefin having a degree of chlorination of 0.7 to 0.85 per carbon atom and at least one agent selected from the group consisting of a coloring agent and a magnetic material.

4,486,560

CARBONATE POLYMER CONTAINING AN IGNITION DEPRESSANT COMPOSITION

Lowell S. Thomas, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 3, 1983, Ser. No. 471,597

Int. Cl.³ C08K 5/42

U.S. Cl. 524—100 **7 Claims**

1. A carbonate polymer composition comprising a carbonate polymer having dispersed therein, in an amount sufficient to provide improved flame retardancy to said carbonate polymer, a fire retardant additive comprising (1) a metal salt of an aromatic sulfonamide, and (2) a halogenated organic compound.

4,486,561

INJECTION-MOLDABLE THERMOPLASTIC POLYESTER COMPOSITION

James Y. J. Chung, New Martinsville, W. Va.; Jesse D. Jones, and Hsueh M. Li, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 294,980, Aug. 21, 1981, abandoned, and a continuation-in-part of Ser. No. 392,221, Jun. 25, 1982, abandoned, and a continuation-in-part of Ser. No. 401,929, Jul. 26, 1982, abandoned. This application Jul. 14, 1983, Ser. No. 513,677

Int. Cl.³ C08K 5/10, 5/15; C08L 67/06

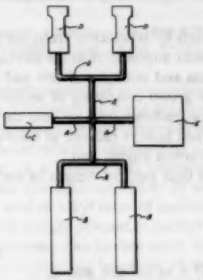
U.S. Cl. 524—107 **27 Claims**

1. A thermoplastic composition which is injection-moldable at a relatively low mold temperature, said composition comprising an intimate admixture of:

(a) a polyethylene terephthalate; and

(b) a hydrocarbyl ester of a mono epoxidized alkenoic acid, said ester being characterized by containing from about 12 to about 50 carbon atoms in the molecule; and

(c) a nucleating agent cooperative with the hydrocarbyl ester of (b) to improve the releasability from the injection



mold, of articles injection molded from said composition at mold temperatures below 93° C.

4,486,562

PROCESS FOR MAKING VULCANIZED CARBON BLACK-REINFORCED BROMOBUTYL RUBBER FILMS

Erhardt Fischer, and Douglas C. Edwards, both of Sarnia, Canada, assignors to Polysar Limited, Sarnia, Canada

Filed Mar. 16, 1984, Ser. No. 590,170
Claims priority, application Canada, Jun. 2, 1983, 429538
Int. Cl.³ C08K *3/04*
U.S. Cl. 524—156 **8 Claims**

1. A process for making a vulcanized carbon black-reinforced chloro- or bromobutyl rubber film comprising:

(a) admixing a polyfunctional amine vulcanization system with a carbon black-reinforced chloro- or bromobutyl rubber latex wherein said latex contains an emulsifier selected from (i) ammonium and alkali metal C_{12-24} fatty acid soaps and mixtures of any two or more of said soaps, (ii) ammonium and alkali metal salts of polyethoxylated sulfates of C_{6-20} alkyl alcohols wherein the number of ethoxylate units is from about 2 to about 50, and (iii) polyethoxylated C_{6-14} alkylphenoxy ethanols and the ammonium and alkali metal salts of the sulfates thereof wherein the number of ethoxylate units is from about 2 to about 150;

(b) forming a film from the resulting mixture;

(c) drying said film in air at a temperature of from about 20° to about 80° C. for a time sufficient to remove essentially all of the water from said film; and

(d) heating the dried film for a time of from about 3 to about 15 minutes at a temperature of from about 100° to about 175° C. to cause the formation of said vulcanized rubber film.

4,486,563

AQUEOUS EMULSIONS OF HIGH SOFTENING POINT HYDROCARBON RESINS AND PROCESS FOR PREPARING THE SAME

Frank C. Jagisch, and Morris L. Evans, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 339,647, Jan. 15, 1982, Pat. No. 4,414,346. This application Aug. 26, 1983, Ser. No. 526,629
Int. Cl.³ C08K *5/42*
U.S. Cl. 524—158 **2 Claims**

1. A method for the production of a hydrocarbon resin in water emulsion comprising the sequential steps of admixing from 3 to 10 parts by weight of an emulsifier of the class consisting of nonionic polyoxyethylene alkyl aryl ether, anionic alkyl aryl sulfonate and mixtures thereof with from 80 to 97 parts by weight resin having a ball and ring softening point in excess of 85° C. and from 0 to 10 parts by weight of a resinplast, heating said admixture to about 120° C., slowly adding water heated to about 100° C. to said heated admixture with stirring over a period of at least 20 minutes and until inversion occurs, and then adding sufficient additional water with agitation to provide an aqueous emulsion containing from 30 to 75 weight % water and thereafter cooling to a temperature less than about 20° C. below the softening point of the mixture of emulsifier, resin and resinplast prior to terminating agitation.

4,486,564

MOLDING COMPOSITIONS

Edward J. Deyrup, Northeast, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 360,569, Mar. 22, 1982, abandoned, which is a continuation-in-part of Ser. No. 009,295, Feb. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 882,219, Feb. 28, 1978, abandoned. This application Jan. 11, 1984, Ser. No. 569,927
Int. Cl.³ C08K *5/11*
U.S. Cl. 524—308 **10 Claims**

1. A composition having a smooth, glossy surface in molded form when molded at mold temperatures of between 85°–110° C., which composition consists essentially of:

A. polyethylene terephthalate having an intrinsic viscosity of at least about 0.4;

B. between about 10 and about 60 percent by weight reinforcing or filling material;

C. material present in an amount sufficient to provide $\Delta H_H/\Delta H_c$ ratio of less than 0.25 to a mixture of components A, B and C, said material consisting essentially of at least one sodium or potassium salt of a carboxyl containing organic polymer;

D. organic ester present in an amount sufficient to provide a Tpk at least 4° C. lower than the Tpk of a mixture of components A, B and C, selected from the product of an aliphatic carboxylic acid of 1 to 20 carbon atoms containing 1 to 3 carboxyl groups, and an alcohol of the formula $HO(R''O)_yR'''$ where R'' is —H or an aliphatic hydrocarbon radical of 2–20 carbon atoms, and when R''' is —H, y is a cardinal number between 2 and 15, and when R''' is an aliphatic hydrocarbon radical, y is a cardinal number between 1 and 15.

4,486,565

PRIMER COMPOSITIONS FOR IMPROVING ADHESION OF ABRASION RESISTANT SILICONE COATINGS TO PLASTIC SURFACES

Kelly L. Benjamin, Freeland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Feb. 18, 1983, Ser. No. 467,730
Int. Cl.³ C08K *5/01, 5/05, 5/06*; C08L *83/00*
U.S. Cl. 524—506 **16 Claims**

1. A composition containing from 99 to 70 weight percent of organic solvent and 1 to 30 weight percent of coating components consisting essentially of

(I) a thermosettable acrylic resin and

(II) from 0.1 to 50 weight percent based on (I) of an aminofunctional organo silicon compound of the general formula

$$(RO)_xO_{(3-x)/2}SiR'NHR''$$

wherein

R is hydrogen or a monovalent hydrocarbon radical of 1 to 12 carbon atoms,

R' is a divalent alkylene radical of 3 or 4 carbon atoms,

R'' is a monovalent radical selected from the group consisting essentially of hydrogen, alkyl radicals of 1 to 4 carbon atoms and the $—CH_2CH_2NH_2$ radical, and

x has an average value from 0 to 3.

9. A composition containing from 99 to 70 weight percent of organic solvent and 1 to 30 weight percent of coating components consisting essentially of

(I) a thermosettable acrylic resin;
(II) from 0.1 to 50 weight percent based on (I) of an amino-functional organo silicon compound of the general formula

$$(RO)_xO_{3-x/2}SiR'NHR''$$

wherein
R is hydrogen or a monovalent hydrocarbon radical of 1 to 12 carbon atoms,
R' is a divalent alkylene radical of 3 or 4 carbon atoms,
R'' is a monovalent radical selected from the group consisting essentially of hydrogen, alkyl radicals of to 4 carbon atoms and the $-CH_2CH_2NH_2$ radical, and
x has an average value from 0 to 3; and
(III) from 0.1 to 100 weight percent based on (I) of an ultraviolet light screening compound.

4,486,566
ROOM TEMPERATURE-CURABLE POLYORGANOSILOXANE COMPOSITIONS HAVING RESISTANCE TO SOILING

Katsuyoshi Nakasuji, Ichihara, and Toshio Saruyama, Narashino, both of Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

Filed Mar. 1, 1983, Ser. No. 471,373
Claims priority, application Japan, Mar. 1, 1982, 57/31964
Int. Cl.³ C08K 5/42; C08L 83/04
U.S. Cl. 524—788 **20 Claims**

1. A polyorganosiloxane composition comprising the product obtained by mixing
(A) 100 parts by weight of a polyorganosiloxane having at least two silicon-bonded hydroxyl radicals or at least two silicon-bonded hydrolyzable groups per molecule,
(B) an amount of an organosilicon compound sufficient to make the composition room temperature curable, said organosilicon compound having at least two silicon-bonded hydrolyzable groups per molecule, where the total number of silicon-bonded hydroxyl radicals or silicon-bonded hydrolyzable groups per molecule in the polyorganosiloxane of (A) and silicon- bonded hydrolyzable groups per molecule of (B) exceeds 4.0, and
(C) 0.5 to 50 parts by weight of an organosulfonate-containing silicon compound.

4,486,567
METHOD OF POLYMERIZING HYDROXYL ENDBLOCKED POLYDIORGANOSILOXANE USING QUATERNARY AMMONIUM CARBOXYLATE-CARBOXYLIC ACID CATALYST

Sheryl A. Bowman, Midland; James R. Falender, Sanford; Jonathan Lipowitz, and John C. Saam, both of Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 14, 1983, Ser. No. 474,917
Int. Cl.³ C08L 83/04
U.S. Cl. 524—863 **25 Claims**

1. A method of polymerizing polydiorganosiloxane oligomer comprising
(A) removing water from a fluid mixture of
(i) 100 parts by weight of polydiorganosiloxane (a) of the formula

$$HO(R_2SiO)_xH$$

where each R is selected from the group consisting of methyl, ethyl, propyl, phenyl, vinyl, allyl, and 3,3,3,-trifluoropropyl radicals, x being an average of from 3 to 50,
(ii) from 0.05 to 5.0 parts by weight of quaternary ammonium carboxylate of the formula

$$R_4^1N^{\oplus}\ominus O-\overset{O}{\overset{\|}{C}}-R^2$$

where each R^1 is selected from the group consisting of monovalent aliphatic radicals having from 1 to 20 carbon atoms and aralkyl radicals and each R^2 is selected from the group consisting of monovalent aliphatic hydrocarbon radicals of 5 or less carbon atoms, phenyl radical, and benzyl radical, at least one R^1 having 4 or greater carbon atoms, and
(iii) at least 0.05 part by weight of carboxylic acid of the formula

$$R^2COOH$$

where R^2 is as defined above,
at a temperature in the range of from 90° C. to 150° C. until the predetermined increase in molecular weight of (a) is achieved by condensation polymerization, then
(B) cooling to ambient temperature to produce a polydiorganosiloxane having a higher molecular weight than (i) of a higher viscosity.

2. The method of claim 1 in which the temperature of the mixture of step (A), after the predetermined increase in molecular weight of (a) is achieved, is increased to a temperature sufficient to cause the condensation polymerization to cease, removing volatile by-products during the process, then proceeding with step (B).

7. The method of claim 2 in which (i) is heated to a temperature of from 100° C. to 135° C. to remove water before the addition of the quaternary ammonium carboxylate and the carboxylic acid.

8. The method of claim 7 in which from 2 to 70 parts by weight of reinforcing filler, said filler being acidic or neutral, is admixed with (i) before the addition of the quaternary ammonium carboxylate and the carboxylic acid to yield a fluid, non-crepeing silicon polymer-filler mixture.

9. The method of claim 8 in which the reinforcing filler is from 10 to 50 parts of fumed silica, the quaternary ammonium carboxylate is present in an amount of from 0.1 to 2 parts by weight, and the carboxylic acid is present in an amount of from 0.5 to 10 parts by weight.

4,486,568
RESIN COMPOSITION

Shunitsu Miyashita, Kobe, and Akiyoshi Somemiya, Akashi, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 28, 1982, Ser. No. 453,917
Claims priority, application Japan, Dec. 28, 1981, 56-5313
Int. Cl.³ C08L 51/08
U.S. Cl. 525—63 **13 Claims**

1. A resin composition comprising (A) 1 to 99 parts by weight of a modified polyphenylene oxide prepared by graft polymerization of an acrylonitrile compound or a monomer mixture containing an acrylonitrile compound and a styrene compound in the presence of polyphenylene oxide, said modified polyphenylene oxide having a degree of graft modification such that the no precipitate forming time as determined by a methylene chloride test conducted at 23° C. by employing a 5 w/v % methylene chloride solution is at least 48 hours, and (B) 99 to 1 parts by weight of a polymer compatible with said modified polyphenylene oxide (A); the polymer (B) being a random copolymer containing units of an acrylonitrile compound and units of a styrene compound or an acrylonitrile-butadiene-styrene copolymer, and the blend of the components (A) and (B) having a transparency such that the haze value is not more than 5.0%.

4,486,569

POLYVINYL CHLORIDE COMPOSITION

Tamio Fujita, Akashi, and Fumiya Nagoshi, Kobe, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 9, 1983, Ser. No. 492,872
Int. Cl.³ C08L 31/04, 33/08, 33/12
U.S. Cl. 525—80 9 Claims

1. A polyvinyl chloride composition comprising (I) 99 to 30 weight parts polyvinyl chloride or vinyl chloride copolymer having at least 80 weight percent vinyl chloride and (II) 1 to 70 weight parts of a polymer which is obtained by polymerizing 1 to 30 weight percent of a mixture (B) comprising 40 to 80 weight percent styrene monomer and 60 to 20 weight percent alkyl ester of acrylic acid or alkyl ester of methacrylic acid, in the presence of 99 to 70 weight percent of methyl methacrylate polymer (A) or a copolymer (A) having more than 75 weight percent methyl methacrylate and less than 25 weight percent styrene monomer, said polymer (A) or copolymer (A) having a specific viscosity lower than 0.6; whereby said polyvinyl chloride composition has improved processability, high clarity, and high heat distortion temperature.

4,486,570

HEAT RESISTANT HIGH IMPACT POLYMER COMPOSITIONS AND METHOD OF MAKING SAME

Frank E. Lordi, and Jacob Triplett, both of West Chester, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 342,293, Jan. 25, 1982, abandoned. This application Aug. 15, 1983, Ser. No. 523,230
Int. Cl.³ C08F 279/02
U.S. Cl. 525—93 3 Claims

1. A thermoplastic composition comprising:

(1) from about 60 to about 90% by weight of a non-equimolar copolymer comprising from about 70 to 98% by weight of a vinyl aromatic monomer and from about 2 to about 30% by weight of an α, β ethylenically unsaturated dicarboxylic acid, its corresponding anhydride or imide,

(2) from about 5 to about 20% by weight of a high conjugated diene-styrenic first copolymer, and

(3) from about 2 to about 20% by weight of a high vinyl aromatic monomer-conjugated diene second copolymer, wherein the components of (1) are polymerized in the presence of components (2) and (3), with the further limitations that:

(a) said first copolymer comprises from about 60 to about 98% by weight of the conjugated diene,

(b) said second copolymer being a block copolymer which comprises a greater amount of vinyl aromatic than conjugated diene monomer, and

(c) said first and said second copolymers cannot be the same,

the resulting thermoplastic composition exhibiting improved impact strength upon molding as compared to the impact strength of the thermoplastic composition prepared by the admixture of components (1), (2) and (3).

4,486,571

EPOXY-MODIFIED POLYBUTADIENE CROSSLINKABLE RESIN COATING COMPOSITION

Joseph W. Holubka, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 5, 1983, Ser. No. 455,719
Int. Cl.³ C08F 8/00; C08L 63/00
U.S. Cl. 525—110 20 Claims

1. A coating composition comprising:

A. crosslinkable resin, optionally at least partially neutralized, comprising the reaction product of:

(a) substantially non-gelled expoxy-modified polybutadiene, comprising the reaction product of:

(i) diamine functionalized polybutadiene reactant of number average molecular weight about 500 to about 5000; with

(ii) monoepoxide reactant of number average molecular weight about 30 to about 500; and with

(iii) diepoxide reactant of number average molecular weight about 100 to about 1000;

said diamine functionalized polybutadiene reactant bearing two secondary amine functionality and being reacted with said monoepoxide reactant and with said diepoxide reactant in molar ratio of about 1 : 0.9–1.1 : 0.9–1.1, respectively; with

(b) di- or polyhydroxy compound of number average molecular weight about 50–500, said epoxy-modified polybutadiene being reacted with said di- or polyhydroxy compound in molar ratio of about 1:0.5 to about 1:2.0, respectively; and

B. amine-aldehyde resin crosslinking agent reactive with hydroxy functionality of said crosslinkable resin, in an amount of about 5%–60% by weight of said crosslinkable resin.

4,486,572

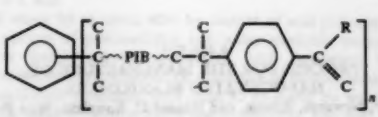
SYNTHESIS OF AMPHIPHILIC BLOCK COPOLYMERS AND NETWORKS

Joseph P. Kennedy, Akron, Ohio, assignor to University of Akron, Akron, Ohio

Filed Jul. 6, 1983, Ser. No. 511,252
Int. Cl.³ C08L 8/00, 10/10, 8/18, 8/26
U.S. Cl. 525—283 7 Claims

4. A copolymer comprising:

the reaction product of:



wherein

PIB is polyisobutylene having a molecular weight from about 500 to about 50,000, n is two or three and R is —H or —CH_3,

and a monomer selected from the group consisting of N-vinyl-2-pyrrolidone, hydroxyethyl methacrylate, acrylamide and vinyl acetate;

wherein said copolymer is amphiphilic.

4,486,573

CARBOXYLIC ACYLATING AGENTS SUBSTITUTED WITH OLEFIN POLYMERS OF HIGH MOLECULAR WEIGHT MONO-OLEFINS, DERIVATIVES THEREOF, AND FUELS AND LUBRICANTS CONTAINING SAME

Katsumi Hayashi, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Aug. 9, 1982, Ser. No. 404,846
Int. Cl.³ C08F 255/08, 255/10
U.S. Cl. 525—285 49 Claims

1. A composition comprising: the reaction product of (I):

(A) one or more alpha-beta olefinically unsaturated carboxylic reagents containing two to about 20 carbon atoms exclusive of the carboxyl-based groups with

(B) one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of

(i) polymers of C_{12}–C_{30} mono-olefins with the proviso that said polymers exclude polymers derived from ethylene and

(ii) chlorinated or brominated analogs of (i):

reacted with (II) one or more amines, one or more alcohols, or a mixture of one or more amines and/or one or more alcohols.

4,486,574

POLYMERS OF METHYL ETHENYL BENZENE

James G. Murray, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 209,095, Nov. 21, 1980, abandoned, which is a continuation of Ser. No. 032,075, Apr. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 870,781, Jan. 19, 1978, abandoned. This application Aug. 27, 1982, Ser. No. 412,418

Int. Cl.³ C08F 8/22, 8/36

U.S. Cl. 525—333.4 2 Claims

1. A moldable, toluene soluble polymer produced by the chlorination or bromination of the polymerization product, having a viscosity average molecular weight of at least 250,000, of a polymerizable monomer mixture in which the sole monomers are isomers of methyl ethenyl benzene, in the following proportions by weight:

1-methyl-2-ethenyl benzene	0 to 0.1 percent
1-methyl-3-ethenyl benzene	1 to 10 percent
1 methyl-4-ethenyl benzene	at least 90 percent

said moldable polymer having substituent chloro or bromo groups.

4,486,575

PROCESS FOR THE MANUFACTURE OF HALOGENATED ELASTOMERS

Neil F. Newman, Edison, and Ronald C. Kowalski, New Providence, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 306,882, Sep. 30, 1981, Pat. No. 4,384,072. This application Apr. 1, 1983, Ser. No. 481,369

The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.

Int. Cl.³ C08F 8/22

U.S. Cl. 525—356 42 Claims

1. A process for the continuous production of halogenated rubber by reacting an olefinically unsaturated rubber and a halogenating agent in an extruder-reactor, said extruder-reactor comprising feed zone (A), reaction zone (B) and neutralization zone (C) in sequence; screw means traversing zones (A) through (C); first flow restriction means following feed zone (A); injection means for supplying halogenating agent to reaction zone (B); mixing means for subjecting rubber in reaction zone (B) to a high degree of mixing; second flow restriction means disposed between reaction zone (B) and neutralization zone (C); and injection means disposed at or adjacent the downstream end of the second flow restriction means for supplying neutralizing agent to the product mixture; further comprising subjecting rubber in the feed zone to conditions of temperature and pressure sufficient to generate a cohesive mass; conveying said mass past said first restriction means to said reaction zone; halogenating the rubber in said reaction zone by injecting halogenating agent at a position filled with said rubber and subjecting the reactants to a high degree of mixing; conveying the product mixture past said second restriction means; injecting neutralizing agent at or adjacent the downstream end of said second restriction means; neutralizing said product mixture with said neutralizing agent in said neutralizing zone; and delivering said halogenated rubber product from the extruder-reactor

4,486,576

HIGH-TEMPERATURE, AROMATIC COATING MATERIALS FROM ARYL POLYHALIDES

Ismael Colon, Middlesex, and Charles N. Merriam, Martinsville, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 22, 1982, Ser. No. 370,825

Int. Cl.³ C08G 61/12

U.S. Cl. 525—471 25 Claims

1. Method of preparing high temperature, cross-linked, solvent-resistant coating materials which comprise the steps in order of:

(A) contacting one or more unsubstituted aryl polyhalide monomers wherein the unsubstituted aryl polyhalide monomer is produced: (1) by the reaction of a dihalobenzenoid compound with a phenolic compound and at least one alkali metal carbonate in a liquid phase of an aprotic solvent and an azeotrope former for a time and at a temperature sufficient to form the "unsubstituted" aryl dichloride monomer, wherein the dihalobenzenoid compound has an inert electron withdrawing group in one or more of the positions ortho and para to the halogen atoms thereby activating the halogen atoms to a level sufficient to react with the alkali metal carbonate reaction product of the phenolic compound; and (2) removing water from the reaction mass of 1 as an azeotrope with said azeotrope former until substantially anhydrous conditions are attained and excess azeotrope former is substantially removed; with a catalyst mixture in the presence of a reducing metal selected from the group consisting of zinc, magnesium and manganese or mixtures thereof in a dipolar aprotic solvent in which said monomer is soluble, under essentially anhydrous conditions for a period of time and at a temperature sufficient to couple said monomer until macromolecules having a degree of polymerization representative of an oligomer or a polymer are produced, wherein the catalyst mixture comprises an anhydrous nickel compound and at least one liquid selected from the group consisting of a triarylphosphine having from about 6 to about 14 carbon atoms in each aryl moiety and an aromatic bidentate compound containing at least one ring nitrogen atom and from about 5 to about 30 carbon atoms and wherein the ratio of gram atoms of nickel per mole of aryl polyhalide monomer is from about 0.001 to about 0.1, the amount of ligand is from about 1 to about 50 moles per gram atom of nickel and the amount of reducing metal is at least about 1 mole of reducing metal per mole of aryl polyhalide monomer;

(B) adding to the reaction mixture of (A) about 0.01 to about 1.0 moles of a substituted organic halide having at least one substitutent per molecule selected from the class consisting of acetoxy, amide, ester, amine, vinyl, alkyne, cyano, silane, epoxide, and isocyanate groups, per mole of unsubstituted aryl polyhalide whereby said macromolecule in (A) further couples with said substituted organic halide to form mixed macromolecules; and

(C) cross-linking the mixed macromolecules from (B).

4,486,577

STRONG, SILICONE CONTAINING POLYMERS WITH HIGH OXYGEN PERMEABILITY

Karl F. Mueller, New York; Sonia J. Heiber, Bedford Hills, and Walter L. Plankl, Yorktown Heights, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 12, 1982, Ser. No. 433,743

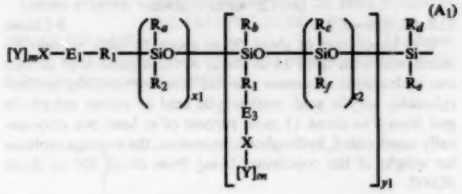
Int. Cl.³ C08F 283/00

U.S. Cl. 525—474 28 Claims

1. A polymer, suitable for use in contact lenses, comprising the crosslinked copolymerization product of

(A) from about 15 to about 60% by weight of said polymer of a linear or branched polysiloxane macromer having a molecular weight from about 400 to about 100,000, as measured by end group analysis or gel permeation chro-

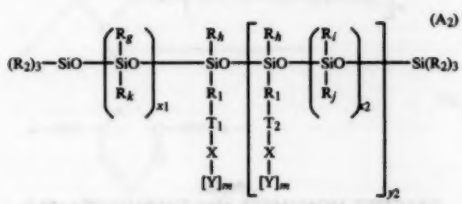
matography, said macromer containing at least two terminal or pendant, polymerizable olefinic groups per each 5000 molecular weight unit of polysiloxane, said groups being attached to the polysiloxane through at least two urethane, thiourethane, urea or amide linkages, said macromer having the structure A_1 or A_2,



(A1)

$-R_1-E_2-X-[Y]_m$

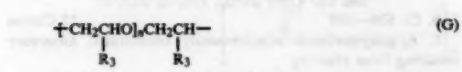
or



(A2)

wherein:

R_1 is a linear or branched alkylene group with 2–6 carbon atoms or a polyoxyalkylene group of structure G



(G)

wherein R_3 is hydrogen or methyl and n is an integer from 1–50 or R_2, R_a, R_b, R_c, R_d, R_e, F_f, R_g, R_h, R_i, R_j, and R_k are independently methyl or phenyl, x_1 and X_2 are integers from 1 to 500 with the provison that the sum of x_1+x_2 is 7 to 1000, y_1 is 0 to 14 and y_2 is 1 to 13 with the proviso that the ratio of

$$\frac{x_1 + x_2}{y_1 + 2} \text{ or } \frac{x_1 + x_2}{y_2 + 1}$$

is not greater than 70,

E_1, E_2, E_3, T_1 and T_2 are each a direct bond,

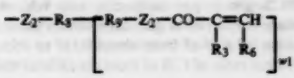
m is 1 or 2,

x is a di- or tri-radical:

$$-Z_1-CO-NH-R_4-(NH-CO-)_v$$

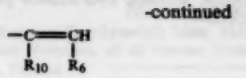
wherein v=1 or 2, Z_1 is oxygen, sulfur or NR_5, wherein R_5 is hydrogen or lower (C_1–C_4) alkyl, Z_1 is connected to R_1; and R_4 is a di- or triradical obtained by removing the NCO-groups from an aliphatic, cycloaliphatic or aromatic di- or triisocyanate;

Y is:

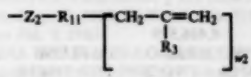


(I)

-continued

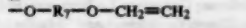


(II)



(III)

or



(IV)

wherein:

R_6 is: hydrogen, methyl, —$COOR_5$ or —$COOR_7OH$ with the proviso that if R_6 is other than hydrogen,

m and w_1 are each 1; and R_8 is a direct bond;

Z_2=oxygen or —NR_5—

R_7 is a linear or branched alkylene of 2 to 10 carbon atoms, phenylene or phenylalkylene with 2 to 10 carbon atoms in the alkylene, or polyoxyalkylene of structure G,

R_8 is R_7 or a tri- or tetra radical residue with 2–4 carbon atoms;

w_1 is 1 to 3;

R_9 is an alkylene group of from 2 to 4 carbon atoms or a direct bond with the proviso that if $w_1=1$, R_9 is a direct bond, and it follows that R_8 is a di-radical;

R_{10} is hydrogen, methyl or —CH_2COOH, with the proviso that if R_{10} is —CH_2COOH, R_6 is hydrogen;

R_{11} is a direct bond or an aliphatic di-, tri- or tetra-radical with from 1–6 carbon atoms, and

w_2 is 1 to 3, with the proviso that if R_{11} is a direct bond, w_2 is 1, and

(B) about 85 to about 40% by weight of said polymer of a mixture of water-soluble and water-insoluble monomers or water-insoluble monomers, said monomers being monoolefinic, diolefinic or a mixture of monoolefinic and diolefinic monmers, with from 85 to 100% by weight of the total monomers being water-insoluble, and with from 25 to 0% by weight of the total monomers being diolefinic.

4,486,578

STABILIZED POLYPHENYLENE SULFIDE AND METHOD FOR PRODUCING SAME

Toshiyuki Asakura; Hiroaki Kobayashi, both of Ohtsu, and Yukio Noguchi, Shiga, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

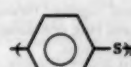
Continuation of Ser. No. 321,695, Nov. 16, 1981, abandoned. This application Jul. 1, 1983, Ser. No. 509,880

Claims priority, application Japan, Nov. 27, 1980, 55-165896

Int. Cl.³ C08F *283/00*

U.S. Cl. 525—535 **9 Claims**

8. A method of preparing a stabilized crystalline polyphenylene sulfide having a reduced degree of oxidizing crosslinking characteristics and having a crystalline melting point in the range of about 250° C. to about 350° C., which comprises preparing a polyphenylene sulfide consisting of at least 90 mole % of a recurring unit,



wherein n is greater than about 20, and reacting said polyphenylene sulfide at 150° to 280° C. with 0.05 to 20 mole % per said phenylene sulfide unit of a halogenated aromatic constituent chemically bonded with said polyphenylene sulfide chain, the aromatic constituent containing an electron attractive group selected from the group consisting of —SO_2—, —CO—, —NO_2, —SO_3R, and —COOR, wherein R is H, lower ali-

phatic hydrocarbon groups, aromatic hydrocarbon groups, alkaline metals or —CONH—.

4,486,579

MODIFIED COPOLYMERS OF ETHYLENE AND α-OLEFINS AND A PROCESS FOR THEIR PREPARATION

Jean-Pierre Machon, Bethune; Genevieve Le Brasseur, Bully les Mines; Jean-Claude Decroix, Arras, and Marius Hert, Aubigny en Artois, all of France, assignors to Societe Chimique des Charbonnages, Paris, France

Filed Dec. 27, 1982, Ser. No. 453,701

Claims priority, application France, Dec. 24, 1981, 81 24217

Int. Cl.³ C08F 4/34

U.S. Cl. 526—65 **16 Claims**

1. A process for the preparation of ethylene copolymers comprising the steps of: (a) copolymerizing ethylene with at least one α-olefin, in at least one reactor, in the presence of a Ziegler-type catalyst system, at a temperature of 180° C. to 320° C. and under a pressure of 300 to 2,500 bars, the average residence time of the catalyst system in the reactor being between 1 and 120 seconds; and (b) introducing from 0.01 to 1 millimole, per kilogram of copolymer, of at least one free-radical initiator, at the end of the polymerization reaction, at a temperature between 220° C. and 320° C., under a pressure between 500 and 1,000 bars.

4,486,580

PROCESS FOR USING T-ALKYL PEROXY-2-ALKYL-2-ARYLACETATES AS FREE-RADICAL INITIATORS AND CURING CATALYSTS

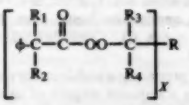
Jose Sanchez, Grand Island, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed May 20, 1983, Ser. No. 496,728

Int. Cl.³ C08F 4/34, 4/36

U.S. Cl. 526—232 **2 Claims**

1. A process of polymerizing vinyl chloride monomer comprising adding to the reaction mass of said monomer an initiating amount of t-alkyl peroxy-2-alkyl-2-arylacetate of the structure:



as the initiator and polymerizing said reaction mass until completion of the reaction wherein

R_1 is hydrogen or an alkyl of 1 to 8 carbons,

R_2 is an alkyl of 1 to 8 carbons,

R_1 and R_2 can be joined together through an alkylene chain to form a cycloalkane ring containing 5 to 6 carbons,

ϕ is an aryl of 6 to 10 carbons,

R_3 and R_4 are lower alkyl of 1 to 4 carbons and can be joined together through an alkylene chain to form a cycloalkane ring containing 5 to 6 carbons, and

X is an integer of 1–2, with the provisos that when X is 1, R is a substituted or unsubstituted alkyl of 1 to 9 carbons or an alkynyl of 2 carbons and when X is 2, R is an alkylene diradical of 2 to 4 carbons or an alkynylene diradical of 2 carbons, wherein the substitutents for R are selected from lower alkyl, hydroxy, or t-alkyl peroxy.

4,486,581

USE OF FUMARIC ACID POLYMERS AS ANTISCALANTS

Stanley W. Walinsky, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 295,209, Aug. 24, 1981, abandoned, which is a continuation of Ser. No. 108,068, Dec. 28, 1979, abandoned. This application Nov. 12, 1982, Ser. No. 441,189

Int. Cl.³ C08F 222/02

U.S. Cl. 526—271 **3 Claims**

1. A copolymer of about 50 to about 85 mole percent fumaric acid with from 15 to about 50 mole percent of at least one hydrophilic monomer selected from acrylamide, methacrylamide, acrylic acid, methacrylic acid or maleic anhydride and from 0 to about 15 mole percent of at least one ethylenically unsaturated, hydrophobic monomer, the average molecular weight of the copolymer being from about 300 to about 10,000.

4,486,582

REACTIVE MONOMERS AND THERMOSETTABLE COMPOSITIONS CONTAINING SAME

Robert E. Hefner, Jr., Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

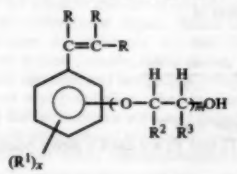
Filed Jan. 27, 1983, Ser. No. 461,342

Int. Cl.³ C08F 26/02, 126/02, 222/02

U.S. Cl. 526—301 **32 Claims**

1. A polymerizable ethyleneically unsaturated monomer resulting from reacting

(A) an aromatic material containing, per molecule, one polymerizable ethylenically unsaturated group and one group containing a hydrogen atom reactive with —NCO and/or —NCS groups, which material is represented by the formula



wherein each R and R^1 group is independently selected from hydrogen or a saturated hydrocarbyl group having from 1 to about 10, carbon atoms; each R^2 and R^3 is independently hydrogen or an alkyl group having from 1 to about 4 carbon atoms; n has a value from zero to about 100 and x has a value from zero to 3;

(B) a material containing at least one oxyalkylene group and is terminated in a group having at least one hydrogen atom which reactive with —NCO and/or —NCS groups; and

(C) a material having an average of more than one —NCO and/or —NCS group per molecule; and wherein the components are employed in quantities which provides an equivalent ratio of A:B of from about 0.1:1 to about 5:1, and an equivalent ratio of C:B of from about 0.1:1 to about 5:1.

4,486,583

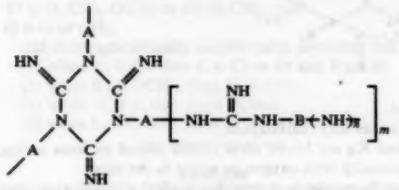
HEAT-RESISTANT RESIN FROM AROMATIC CYANAMIDE COMPOUND AND AROMATIC AMINE COMPOUND

Akio Takahashi, Hitachiohta; Masahiro Ono, Hitachi; Ritsuro Tada, Mito; Motoyo Wajima, and Hirosada Morishita, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

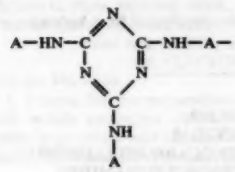
Filed Aug. 23, 1983, Ser. No. 525,700
Claims priority, application Japan, Aug. 23, 1982, 57-144736
Int. Cl.³ C08G 73/08
U.S. Cl. 528—422 13 Claims

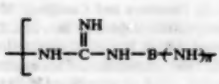
1. A heat-resistant resin containing structural units of the following formulae [I] and [II]:

[I]



[II]





wherein A and B each represents divalent organic group having at least one aromatic ring and m and n each represents a number of at least 1.

4,486,584

DEMETHYLMACROCIN COMPOUNDS AND DERIVATIVES THEREOF

Richard H. Baltz; Gene M. Wild, both of Indianapolis, Ind., and Eugene T. Seno, Norwich, England, assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 169,051, Jul. 15, 1980, Pat. No. 4,385,116. This application Dec. 20, 1982, Ser. No. 450,879
Int. Cl.³ C07H 17/08; C12P 19/62
U.S. Cl. 536—7.1 16 Claims

1. A compound selected from the group consisting of (1) 2'''-O-demethylmacrocin; (2) 20-dihydro-2'''-O-demethylmacrocin; (3) 2'''-O-demethyllactenocin; (4) 20-dihydro-2'''-O-demethyllactenocin; (5) the 2'-monoesters of 2'''-O-demethylmacrocin and of 20-dihydro-2'''-O-demethylmacrocin; (6) the 2',4'-diesters of 2'''-O-demethyllactenocin and 20-dihydro-2'''-O-demethyllactenocin, wherein each of said esters is an ester of a monocarboxylic acid or a hemi-ester of a dicarboxylic acid, each of 2 to 18 carbon atoms; and (7) the acid addition salts of (1) through (6).

4,486,585

PROCEDURE FOR PRODUCING SOLUBLE CELLULOSE DERIVATIVES

Olli Turunen; Leo Mandell; Vidar Eklund; Kurt Ekman, and Jouko Huttunen, all of Porvoo, Finland, assignors to Neste Oy, Finland

PCT No. PCT/FI82/00069, § 371 Date Aug. 30, 1983, § 102(e) Date Aug. 30, 1983, PCT Pub. No. WO83/02278, PCT Pub. Date Jul. 7, 1983
PCT Filed Dec. 30, 1982, Ser. No. 537,379
Claims priority, application Finland, Dec. 30, 1981, 814208
Int. Cl.³ C08B 15/06
U.S. Cl. 536—30 10 Claims

1. Method of producing cellulose carbamate from cellulose and urea, which comprises exposing cellulose in web form to a radiation dose of 0.5–10 Mrad, thereby causing depolymerization of said cellulose, and reacting the thus depolymerised cellulose with urea at elevated temperature to thereby form cellulose carbamate.

4,486,586

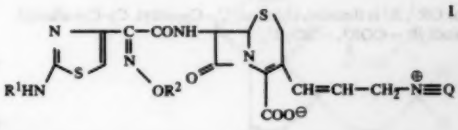
CEPHALOSPORIN DERIVATIVES

Yukio Narita, Yokohama; Seiji Iimura; Shimpei Aburaki, both of Tokyo; Jun Okumura, Yokohama, and Takayuki Naito, Kawasaki, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

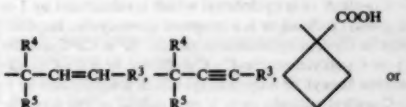
Filed Feb. 10, 1983, Ser. No. 465,374
Int. Cl.³ C07D 501/46; A61K 31/545
U.S. Cl. 544—022 29 Claims

1. A compound of the formula

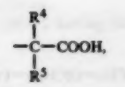
I



wherein R^1 is hydrogen or a conventional amino-protecting group, R^2 is hydrogen, a straight or branched chain alkyl group containing from 1 to 4 carbon atoms, or a group of the formula



or



in which R^3 is hydrogen, (lower)alkyl or carboxyl, X is halogen, hydroxy or (lower)alkoxy, and R^4 and R^5 are each independently hydrogen, methyl or ethyl, or R^4 and R^5, taken together with the carbon atom to which they are attached, may be a cycloalkylidene ring containing from 3 to 5 carbon atoms, and

is a quaternary ammonio group, or a nontoxic pharmaceutically acceptable salt, physiologically hydrolyzable ester or solvate thereof.

4,486,587

CONCENTRATION OF LIGHT OVER A PARTICULAR AREA AND NOVEL FLUORESCENT COMPOUNDS

Guenther Seybold, Neuhofen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

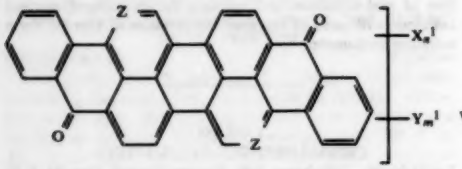
Filed Aug. 20, 1982, Ser. No. 409,833

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1981, 3133390

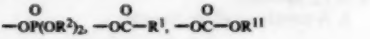
Int. Cl.³ C07D 39/00

U.S. Cl. 544—99 6 Claims

1. A compound of the formula

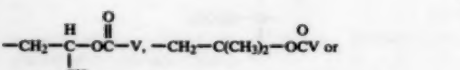


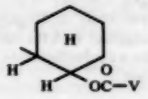
where Z is =N— or =CH—, Y^1 is $-OSO_2R^1$,



or OR^3, X^1 is fluorine, chlorine, C_1–C_{20}-alkyl, C_3–C_{20}-alkenyl, aralkyl, $-COR^1$, $-SO_2R^1$,

—NH—COR^1 or —NH—SO_2R^1, m is 2, 3 or 4, n is 0, 1 or 2, R^1 is unsubstituted or fluorine-substituted C_1–C_{20}-alkyl, C_3–C_{20}-alkenyl, or unsubstituted C_1–C_{18}-alkyl-substituted phenyl, R^2 is C_1–C_{18}-alkyl, or is cyclohexyl which is substituted by 1 or 2 C_3–C_{10}-alkyl radicals or is a saturated monocyclic, bicyclic or polycyclic C_7–C_{30}-hydrocarbon radical, R^3 is C_4–C_{20}-alkenyl or C_2- or C_3-alkylenecarbo-C_1–C_{20}-alkoxy, or is C_3–C_{20}-alkyl-substituted benzyl, or is cyclohexyl which is substituted by 1 or 2 C_3–C_{10}-alkyl radicals, or is V or a radical of the formula





R^{11} is C_4–C_{20}-alkyl or is cyclohexyl which is substituted by 1 or 2 C_3–C_{10}-alkyl radicals or is a saturated monocyclic, bicyclic or polycyclic C_7–C_{30}-hydrocarbon radical, and V is C_8–C_{19}-alkyl, 4-(C_3–C_{20}-alkyl)-phenyl or a saturated monocyclic, bicyclic or polycyclic C_7–C_{30}-hydrocarbon radical.

4,486,588

CYCLOHEXADIENE CARBOXYLATE INSECTICIDE INTERMEDIATES

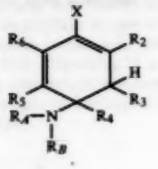
William A. Van Saun, Titusville, and David M. Roush, West Trenton, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 312,591, Oct. 19, 1981, abandoned. This application Oct. 19, 1982, Ser. No. 435,164

Int. Cl.³ C07C 295/14

U.S. Cl. 544—172 4 Claims

1. A chemical compound of the formula



wherein

X is lower alkyl carboxylate;

R_A and R_B are lower alkyl chains joined to form a ring, optionally with oxygen or sulfur in the ring;

R_3 and R_4 may be hydrogen, lower alkyl, cycloalkyl, or aryl; and

R_2, R_5, and R_6 are independently selected from hydrogen or lower alkyl.

4,486,589

HERBICIDAL N-(HETEROCYCLICAMINOCARBONYL)-ORTHO-HALOALKYLBENZENESULFONAMIDES

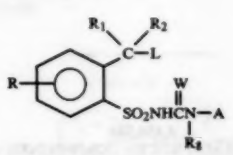
William B. Farnham, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 259,982, May 12, 1981, abandoned, which is a continuation-in-part of Ser. No. 168,892, Jul. 11, 1980, abandoned. This application Oct. 21, 1982, Ser. No. 435,711

Int. Cl.³ C07D 239/34; A01N 43/02

U.S. Cl. 544—321 14 Claims

1. A compound selected from



(I)

wherein

L is Cl, F, Br, NR_3R_4, $N^+R_3R_4R_4'$, $N(R_4)C(O)R_5$, $N(R_4)C(O)NHR_6$ or $N(R_4)C(O)OR_7$;

R is H, F, Cl, Br, NO_2, CF_3, C_1–C_3 alkyl or C_1–C_3 alkoxy;

R_1 is H, F, Cl or C_1–C_4 alkyl;

R_2 is H or CH_3;

R_3 is H, C_1–C_4 alkyl or OCH_3;

R_4 is H or C_1–C_4 alkyl;

R_3 and R_4 can be taken together to form $-(CH_2)_4-$, $-(CH_2)_5-$ or $-(CH_2)_2O(CH_2)_2-$;

R_4' is H, CH_3 or CH_2CH_3;

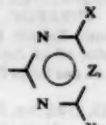
R_5 is C_1–C_5 alkyl optionally substituted with 1–3 atoms of F, Cl or Br, or C_3–C_4 alkenyl;

R_6 is H, C_1–C_4 alkyl or C_3–C_4 alkenyl;

R_7 is C_1–C_4 alkyl;

R_8 is H, CH_3 or OCH_3;

A is



W is O or S;
X is H, Cl, Br, CH_3, CH_2CH_3, C_1–C_3 alkoxy, CF_3, SCH_3 or CH_2OCH_3;
Y is CH_3 or OCH_3;
Z is CH, CCl, CBr, CCN, CCH_3, CCH_2CH_3, CCH_2CH_2Cl or $CCH_2CH{=}CH_2$;
Y^1 is H, CH_3, OCH_3 or OCH_2CH_3; and
Q is O or CH_2;
and their agriculturally suitable salts; provided that:
(1) when R_1 is Cl, then L is Cl or Br and R_2 is H;
(2) when R_3 is OCH_3, then R_4 is CH_3;
(3) when W is S, then R_8 is H; and
(4) when L is F, then R_1 is H, F, or C_1–C_4 alkyl.

4,486,590

PREPARATION OF 2-T-BUTYL-5-CHLOROPYRIMIDINE

Richard G. Pews, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 2, 1982, Ser. No. 404,268
Int. Cl.³ C07D *239/30*
U.S. Cl. 544—334 **5 Claims**

1. Process for the preparation of 2-t-butyl-5-chloropyrimidine which comprises chlorinating 2-t-butylpyrimidine in acetic or propionic acid solution with elemental chlorine in the absence of a catalyst at temperatures of from 40° to 90° C.

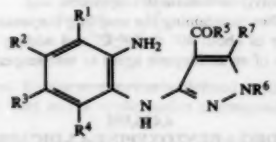
4,486,591

4-SUBSTITUTED-1-(3-[2-AMINOANILINO]-1-PYRAZOLE-4-CARBONYL)PIPERAZINE

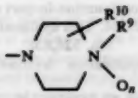
Jiban K. Chakrabarti, Camberley, and Terrence M. Hotten, Farnborough, both of England, assignors to Lilly Industries Limited, London, England

Division of Ser. No. 193,200, Oct. 2, 1980, Pat. No. 4,404,137. This application Sep. 29, 1982, Ser. No. 426,580
Claims priority, application United Kingdom, Oct. 16, 1979, 7935846
Int. Cl.³ C07D *403/06*
U.S. Cl. 544—371 **1 Claim**

1. An intermediate compound of the formula



where R^1, R^2, and R^3 independently represent hydrogen, halogen, or C_{1-4} haloalkyl
R^4 is hydrogen;
in which R^5 is a group of the formula



where R^9 is hydrogen, C_{1-4} alkyl, C_{3-7} cycloalkyl C_{1-4} alkyl, or benzyl,
where R^{10} is hydrogen, and where n is 0;
in which R^6 is C_{1-6}alkyl, C_{3-7} cycloalkyl, or C_{3-7} cycloalkyl C_{1-4} alkyl, and
in which R^7 is hydrogen.

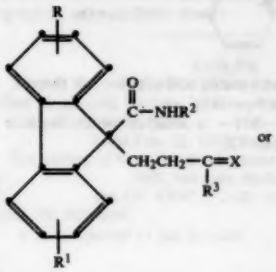
4,486,592

9-CARBAMOYLFLUORENE DERIVATIVES

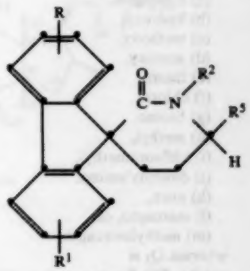
William B. Lacefield, and Terry D. Lindstrom, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 19, 1983, Ser. No. 543,200
Int. Cl.³ C07D *221/20*
U.S. Cl. 546—17 **21 Claims**

1. A compound having the formula

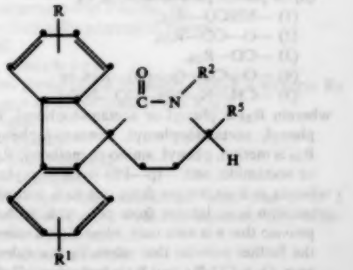


or



wherein
R and R^1 independently are hydrogen, C_1–C_4 alkyl, or halo;
R^2 is hydrogen or C_1–C_6 alkyl;
R^3 is hydrogen, hydroxy, or C_1–C_4 alkoxy;
X is O or N-R^4, where
R^4 is C_1–C_6 alkyl, CH_2C_2–C_5 alkenyl or phenyl-C_1–C_3 alkyl, provided that R^3 is hydrogen when X is N–R^4; and
R^5 is hydrogen or hydroxy.

14. A compound of claim 1 having the formula



wherein R^2 is hydrogen.

4,486,593

2-,3-, OR 4-PYRIDINYLMETHYLAMINO ARYLIC ACIDS AS THROMBOXANE A_2 SYNTHETASE AND 5-LIPOXYGENASE INHIBITORS

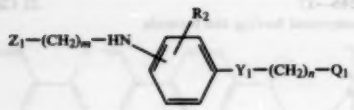
Chiu-Hong Lin, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 19, 1983, Ser. No. 459,074

Int. Cl.³ C07D *401/12, 213/55*

U.S. Cl. 546—335 **16 Claims**

1. A compound of the Formula I,



I

or a pharmacologically acceptable acid addition salt thereof,

wherein Z_1 is 2-, 3-, or 4-pyridyl;

wherein $Z_1—(CH_2)_m—NH—$ is attached ortho, meta or para to $—Y_1—(CH_2)_n—Q_1$;

wherein Y_1 is

(a) —O—,

(b) —S—,

(c) $—NR_3—$, or

(d) a valence bond;

wherein R_2 is

(a) hydrogen,

(b) hydroxy,

(c) methoxy,

(d) acetoxy,

(e) fluoro,

(f) chloro,

(g) bromo,

(h) methyl,

(i) trifluoromethyl,

(j) dimethylamino,

(k) nitro,

(l) mercapto, or

(m) methylmercapto;

wherein Q_1 is

(a) $—CO_2R_1$, or

(b) 1-tetrazolyl;

wherein R_1 is

(a) hydrogen,

(b) a pharmacologically acceptable cation,

(c) (C_1–C_{12}) alkyl,

(d) (C_3–C_{10}) cycloalkyl,

(e) (C_7–C_{12}) aralkyl,

(f) phenyl,

(g) phenyl mono-, di-, or trisubstituted by chloro (C_1–C_3) or alkyl,

(h) or phenyl para-substituted by

(1) $—NHCO—R_{25}$,

(2) $—O—CO—R_{26}$,

(3) $—CO—R_{24}$,

(4) $—O—CO—(p—Ph)—R_{27}$, or

(5) $—CH=N—NH—CO—NH_2$;

wherein R_{24} is phenyl or acetamidophenyl, R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or amino, R_{26} is methyl, phenyl, amino or methoxy, R_{27} is hydrogen or acetamido, and —(p—Ph) is 1,4-phenylene;

wherein m is an integer from one to 6, inclusive;

wherein n is an integer from zero to 6, inclusive, with the proviso that n is zero only when Y_1 is a valence bond with the further proviso that when Y_1 is a valence bond, n is zero, Q_1 is CO_2R_1, and R_1 is hydrogen, alkyl or a pharmacologically acceptable cation, R_2 is hydroxy.

4,486,594

THIAZOLIDINE DERIVATIVES AND PRODUCTION THEREOF

Yutaka Kawamatsu, Kyoto; Takeshi Fujita, Takarazuka, and Yujiro Yamamoto, Suita, all of Japan, assignors to Takeda Chemical Industries, Ltd. and Senju Pharmaceutical Co., Ltd., both of Osaka, Japan

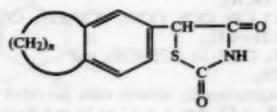
Filed Apr. 13, 1983, Ser. No. 484,549

Claims priority, application Japan, Apr. 13, 1982, 57-62223

Int. Cl.³ C07D *277/34*; A61K *31/425*

U.S. Cl. 548—183 **4 Claims**

1. A compound of the formula:



(I)

wherein n stands for an integer of 3 to 6, or a pharmaceutically acceptable salt thereof.

4,486,595

PROCESS FOR THE PREPARATION OF STABLE AQUEOUS SUSPENSIONS OF METHYL N-(2-BENZIMIDZOLYL)-CARBAMATE

András Szegö ; Ferenc Kováts; Viktória Péterdi; István Bóné ; László Gombos; Ferenc Öz, all of Budapest, and Imre Simon, Visegrád, all of Hungary, assignors to Chinoin Gyogyszer Es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Continuation of Ser. No. 260,161, May 4, 1981, abandoned. This application Oct. 24, 1983, Ser. No. 543,807

Claims priority, application Hungary, May 9, 1980, 1142/80

Int. Cl.³ C07D *235/32*

U.S. Cl. 548—306 **10 Claims**

1. A process for the preparation of a stable, aqueous suspension of methyl-N-(2-benzimidazolyl)-carbamate in the form of particles of a size less than 5 microns, which comprises the steps of:

(a) treating an aqueous inorganic acid with carbendazime at a temperature of 100° C. to 50° C. to form an aqueous solution of an inorganic acid addition salt of methyl N-(2-benzimidazolyl)-carbamate and adding a wetting agent to said solution;

(b) treating the solution at a temperature of 100° C. to 50° C. with an aqueous potassium, sodium or ammonium hydroxide solution or with ammonia gas in the presence of a dispersing agent with stirring to form methyl-N-(2-benzimidazolyl)-carbamate in suspension; and

(c) thereafter maintaining the resulting suspension at a temperature of about 40° to 60° C. and adding an aqueous solution of an antideposit agent to said suspension.

4,486,596

2,3-DIHYDRO-1-BENZOXEPINE-4,5-DICARBOXYLIC ACID ANHYDRIDES

Hans Zweifel, Basel; Walter Schilling, Himmelried; Angelo Storni, Rheinfelden, and Daniel Bellus, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

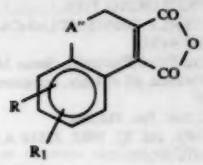
Division of Ser. No. 349,420, Feb. 16, 1982, Pat. No. 4,424,366, which is a division of Ser. No. 183,905, Sep. 4, 1980, Pat. No. 4,337,200, which is a continuation-in-part of Ser. No. 9,985, Feb. 6, 1979, Pat. No. 4,242,264. This application Aug. 29, 1983, Ser. No. 526,938

Claims priority, application Switzerland, Feb. 8, 1978, 1400/78

Int. Cl.³ C07D *321/10*

U.S. Cl. 549—239 **2 Claims**

1. A compound of the formula V



(V)

in which A'' is —OCH_2— with the oxygen atom bonded to the aromatic ring and R and R_1 independently of one another are hydrogen, halogen, alkyl having 1–4 C atoms or methoxy.

4,486,597

METHOD FOR THE PRODUCTION OF NUCLEAR SUBSTITUTED CINNAMOYLANTHRANILIC ACID DERIVATIVES

Kinji Iizuka, Matsumoto; Tetsuhide Kamino, Shiojiri; Ryoji Yamamoto, and Hiromu Harada, both of Matsumoto, all of Japan, assignors to Kissei Pharmaceutical Co., Ltd., Japan

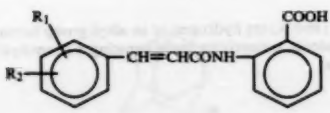
Continuation of Ser. No. 405,159, Aug. 4, 1982,. This application Feb. 7, 1984, Ser. No. 577,758

Claims priority, application Japan, Sep. 1, 1981, 56-137344

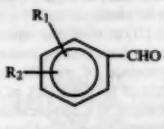
Int. Cl.[3] C07C *99/00*

U.S. Cl. 562—455 9 Claims

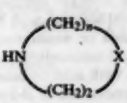
1. A process for the production of a nuclear substituted cinnamoylanthranilic acid derivative corresponding to the formula:



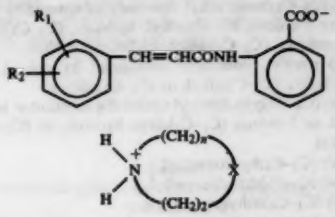
where each of R_1 and R_2 is an alkoxy group having about 1–3 carbon atoms, which process comprises (1) reacting in an inert organic solvent medium a nuclear substituted benzaldehyde derivative corresponding to the formula:



where R_1 and R_2 are as previously defined, with 2-carboxymalonanilic acid and a cyclic amine corresponding to the formula:



where X is a methylene group or an oxygen atom, n is 1 or 2 with the proviso that n is 2 when X is an oxygen atom, and said cyclic amine is employed in about an equimolar amount with respect to the substituted benzaldehyde derivative reactant or 2-carboxymalonanilic acid reactant, to produce an intermediate crystalline precipitate of a compound corresponding to the formula:



where R_1, R_2, n and X are as previously defined; and (2) treating the intermediate compound with an acidic reagent to yield a nuclear substituted cinnamoylanthranilic acid product corresponding to the formula above.

4,486,598

CARBACYCLIN ANALOGS

Paul A. Aristoff, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

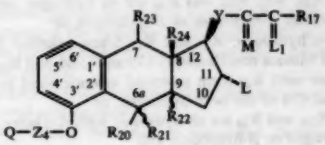
Filed Feb. 22, 1982, Ser. No. 351,069

The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.

Int. Cl.[3] C07C *177/00*; A61K *31/557*

U.S. Cl. 562—466 7 Claims

1. A compound of the formula



wherein Q is

(1) —$COOR_5$, wherein R_5 is
  (a) hydrogen,
(b) (C_1–C_{12})alkyl,
  (c) (C_3–C_{10})cycloalkyl,
  (d) (C_7–C_{12})aralkyl,
  (e) phenyl optionally substituted with one, 2 or 3 chloro or (C_1–C_4)alkyl,
  (f) phenyl substituted in the para-position with —NH-COR_6, —COR_7, —OC(O)R_8 or —CH=N—NH-$CONH_2$, wherein R_6 is methyl, phenyl, acetamidophenyl, benzamidophenyl or —NH_2; R_7 is methyl, phenyl, —NH_2, or methoxy; and R_8 is phenyl or acetamidophenyl;
  (g) phthalidyl,
  (h) 3-(5,5-dimethyl-1,3,2-dioxaphosphorinan-2-yl)-2-oxopropan-1-yl P-oxide,
  (i) 3-(5,5-di(hydroxymethyl)-1,3,2-dioxaphosphorinan-2yl)-2-oxopropan-1-yl P-oxide, or
(j) a pharmacologically acceptable cation;
(2) —CH_2OH;
(3) —COL_2, wherein L_2 is
  (a) an amino group of the formula —NR_9R_{10} wherein R_9 is hydrogen or (C_1–C_{12})alkyl and R_{10} is
    (i) hydrogen
    (ii) (C_1–C_{12})alkyl
    (iii) (C_3–C_{10})cycloalkyl,
    (iv) (C_7–C_{12})aralkyl
    (v) phenyl optionally substituted with one, 2 or 3 chloro, (C_1–C_3)alkyl, hydroxy, carboxy, (C_2–C_5)alkoxycarbonyl, or nitro,
    (vi) (C_2–C_5)carboxyalkyl,
    (vii) (C_2–C_5)carbamoylalkyl,
    (viii) (C_2–C_5)cyanoalkyl,

(ix) (C_3–C_6)acetylalkyl,
(x) (C_7–C_{12})benzoalkyl, optionaly substituted by one, 2, or 3 chloro, (C_1–C_3)alkyl, hydroxy, (C_1–C_3)alkoxy, carboxy, (C_2–C_5)-alkoxycarbonyl, or nitro,
(xi) pyridyl, optionally substituted by one, 2, or 3 chloro, (C_1–C_3)alkyl, or (C_1–C_3)alkoxy,
(xii) (C_6–C_9)pyridylalkyl optionally substituted by one, 2, or 3 chloro, (C_1–C_3)alkyl, hydroxy, or (C_1–C_3)alkyl,
(xiii) (C_1–C_4)hydroxyalkyl,
(xiv) (C_1–C_4)dihydroxyalkyl,
(xv) (C_1–C_4)trihydroxyalkyl;

(b) cycloamino selected from the group consisting of pyrolidino, piperidino, morpholino, piperazino, hexamethyleneimino, pyrroline, or 3,4-didehydropiperidinyl optionally substituted by one or 2(C_1–C_{12})alkyl;
(c) carbonylamino of the formula $-NR_{11}COR_{10}$, wherein R_{11} is hydrogen or (C_1–C_4)alkyl and R_{10} is other than hydrogen, but otherwise defined as above;
(d) sulfonylamino of the formula $-NR_{11}SO_2R_{10}$ wherein R_{11} and R_{10} are defined in (c);

(4) $-CH_2NL_3L_4$, wherein L_3 and L_4 are hydrogen or (C_1–C_4)alkyl, being the same or different, or the pharmacologically acceptable acid addition salts thereof when Q is $-CH_2NL_3L_4$; or
(5) —CN;

wherein Z_4 is $-CH_2-$ or $-(CH_2)_f-CF_2-$ wherein f is zero, one, 2, or 3;

wherein

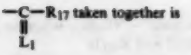
(1) R_{20}, R_{21}, R_{22}, R_{23}, and R_{24} are all hydrogen with R_{22} being either α-hydrogen or β-hydrogen; or
(2) R_{20} is hydrogen, R_{21} and R_{22} taken together form a second valence bond between C-9 and C-6α, and R_{23} taken together with R_{24} form a second valence bond between C-7 and C-8 or are both hydrogen, or
(3) R_{22}, R_{23}, and R_{24} are all hydrogen with R_{22} being either α-hydrogen or β-hydrogen, and
(a) R_{20} and R_{21} taken together are oxo, or
(b) R_{20} is hydrogen and R_{21} is hydroxy, being α-hydroxy or β-hydroxy;

wherein L is H,H; α-OH,β-H; α-H,β-OH; α-CH_2OH,β-H; α-H,β-CH_2OH;

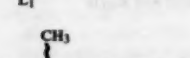
wherein Y is trans —CH=CH—, cis—CH=CH—, $-CH_2CH_2-$, or —C≡C—; wherein M is α-OH,β-R_{14}; or α-R_{14},β-OH, wherein R_{14} is hydrogen or methyl;

wherein L_1 is α-R_{15},β-R_{16}; α-R_{16},β-R_{15}; or a mixture thereof wherein R_{15} and R_{16} are hydrogen, methyl, or fluoro being the same or different with the proviso that one of R_{15} and R_{16} is fluoro only when the other of R_{15} and R_{16} is hydrogen or fluoro;

wherein



$-C(=L_1)-R_{17}$ taken together is



(1) $-CH(CH_3)-CH_2C\equiv C-CH_3$,

(2) $-C\equiv C-C_qH_{2q}CH_3$ wherein q is an integer of from 2 to 6, or
(3) $-C_pH_{2p}CH=CH_2$ wherein p is an integer of from 3 to 7;

and pharmacologically acceptable salts and individual optical isomers thereof.

4,486,599

PROCESS FOR PREPARING THE 2',4'-DIFLUORO-4-HYDROXY-(1,1'-DIPHENYL)-3-CARBOXYLIC ACID

Mariano Meneghin, Revine-Lago; Piero Piccinelli, Sasso Marconi, and Claudio Giordano, Vicenza, all of Italy, assignors to Zambon S.p.A., Vicenza, Italy

Filed Jul. 22, 1983, Ser. No. 516,356
Claims priority, application Italy, Jul. 22, 1982, 22516 A/82
Int. Cl.³ C07C *63/00*
U.S. Cl. 562—469 4 Claims

1. Process for preparing 2',4'-difluoro-4-hydroxy-(1,1'-diphenyl)-3-carboxylic acid which comprises the reaction of 2',4'-difluoro-4-hydroxy-1,1'-diphenyl or of a derivative thereof with an alkylcarbonate of an alkaline metal at atmospheric pressure.

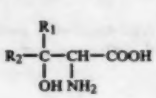
4,486,600

PROCESS FOR THE PRODUCTION OF β-HYDROXY-α-AMINOCARBOXYLIC ACIDS

Axel Kleemann, Hanau; Bernd Lehmann, Konstanz, and Klaus Deller, Hainburg, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

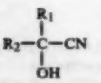
Filed Nov. 16, 1983, Ser. No. 552,102
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1982, 3242748
Int. Cl.³ C07C *101/30*
U.S. Cl. 562—567 24 Claims

1. A process for the production of β-hydroxy-α-aminocarboxylic acid of the formula:



(I)

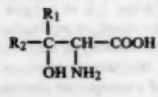
in which R_1 and R_2 are hydrogen or an alkyl group having 1 to 10 carbon atoms, comprising hydrogenating a cyanohydrin of the formula:



(II)

in an aqueous medium which per mole of cyanohydrin of formula (II) employed contains at least 1 mole of water in the presence of a palladium or platinum catalyst and, based on the cyanohydrin of formula (II) at least one equivalent of an inorganic or organic acid or at least one equivalent of an acid ion exchanger or in the presence of metallic nickel and, again based on the cyanohydrin of formula (II), at least one equivalent of an acid ion exchanger at a temperature between −10° and +40° C. and a hydrogen pressure of less than 10 bar until one mole of hydrogen is taken up per mole of cyanohydrin of formula (II) employed, separating off the catalyst and the ion exchanger if present, and employing the remaining solution as the starting material in the Strecker synthesis of the aminocarboxylic acid by reacting said solution with hydrocyanic acid or a salt thereof and ammonia or ammonium salt to form the corresponding β-hydroxy-2-aminonitrile and saponifying the β-hydroxy-2-aminonitrile with acid or base.

13. A process for the production of β-hydroxy-α-aminocarboxylic acid of the formula:



(I)

in which R_1 and R_2 are hydrogen or an alkyl group having 1 to

10 carbon atoms, comprising hydrogenating a cyanohydrin of the formula:

(II)

in an aqueous medium which per mole of cyanohydrin of formula (II) employed contains at least 1 mole of water in the presence of a palladium or platinum catalyst and, based on the cyanohydrin of formula (II) at least one equivalent of an inorganic or organic acid or at least one equivalent of an acid ion exchanger or in the presence of metallic nickel and, again based on the cyanohydrin of formula (II), at least one equivalent of an acid ion exchanger at a temperature between −10° and +40° C. and a hydrogen pressure of less than 10 bar until one mole of hydrogen is taken up per mole of cyanohydrin of formula (II) employed, separating off the catalyst and the ion exchanger if present, and employing the remaining solution as the starting material in the Bucherer synthesis of the aminocarboxylic acid by reacting said solution with hydrocyanic acid or a salt thereof and with ammonia and carbon dioxide or with ammonium carbonate to form a 5-substituted hydantoin and saponifying the hydantoin with a base.

4,486,601

ESTERS OF 2-ADAMANTANONE OXIME

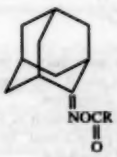
C. Richard Kinsolving, Fairport, and Vassil St. Georgiev, Rochester, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 19, 1983, Ser. No. 524,484

Int. Cl.³ C07C 131/02

U.S. Cl. 564—254 **11 Claims**

1. The compounds



wherein R is a member of the class of lower alky, lower alkenyl, aryl, aralkyl and aralkenyl wherein the aryl groups may bear substituents for hydrogen selected from the group consisting of nitrile, nitro, halo and alkoxy.

4,486,602

VALIENAMINE DERIVATIVES, THEIR PRODUCTION AND USE

Satoshi Horii, Sakai; Yukihiko Kameda, Kanazawa, and Hiroshi Fukase, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

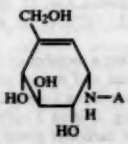
Filed Sep. 29, 1981, Ser. No. 306,774

Claims priority, application Japan, Oct. 6, 1980, 55-140172

Int. Cl.³ C07C 91/18; C12N 9/96

U.S. Cl. 564—360 **5 Claims**

1. A compound of formula



wherein A is a member of the class consisting of —CH_2C-H_2—phenyl, —$CH_2CH_2CH_2$—phenyl, —CH_2—CH(OH-)—phenyl, —$CH(CH_2OH)$—$CH(OH)$—phenyl, —$CH(CH_2OH)_2$, and 3,4-dihydroxybenzyl.

4,486,603

PREPARATION OF TRANS CYCLOHEXANE 1,4-DIAMINE

Hans Zengel, Kleinwallstadt, and Manfred Bergfeld, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Enka, N.C.

Division of Ser. No. 215,415, Dec. 11, 1980, Pat. No. 4,418,211, which is a division of Ser. No. 49,112, Jun. 18, 1979, Pat. No. 4,275,223, which is a division of Ser. No. 883,949, Mar. 6, 1978, Pat. No. 4,203,416. This application Sep. 20, 1982, Ser. No. 420,186

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710595

Int. Cl.³ C07C 85/00, 87/36

U.S. Cl. 564—461 **1 Claim**

1. A process for making trans-cyclohexane-1,4-diamine preferentially to its cis-stereoisomer, which comprises

(a) reacting mixed cis- and trans-cyclohexane-1,4-dicarboxylic acid or an ester thereof with ammonia in a liquid polyhydric alcohol solvent for the acid or ester at a temperature of from about 25° C. to about 200° C. and under an ammonia partial pressure of about 0.1 bar to 50 bars;

(b) separating the resulting solid dicarboxylic acid diamide from the liquid phase including any water soluble constituents therein;

(c) suspending the resulting solid diamide in an aqueous mineral acid or water;

(d) chlorinating the resulting suspended diamide to form cyclohexane-1,4-dicarboxylic acid-bis-N-chloramide,

and

(e) reacting said chloramide with an alkali metal hydroxide or alkaline earth metal hydroxide to form substantially exclusively trans-cyclohexane-1,4-diamine.

4,486,604

DIPHENYL SULFONE COMPOUNDS

Hiroyuki Konishi; Naganori Hino; Hiroshi Matsumoto, all of Osaka, and Ryo Yoshida, Kawanishi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

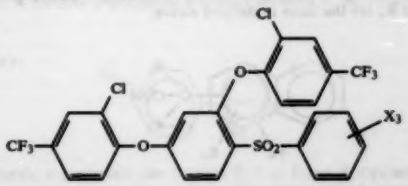
Division of Ser. No. 318,999, Nov. 6, 1981, Pat. No. 4,374,662. This application Sep. 30, 1982, Ser. No. 430,510

Claims priority, application Japan, Nov. 17, 1980, 55/162319

Int. Cl.³ C07C 147/06; A01N 41/10

U.S. Cl. 568—33 **1 Claim**

1. A compound of the formula:



wherein X_3 is a hydrogen atom, a halogen atom, a lower alkyl group or a lower alkoxy group.

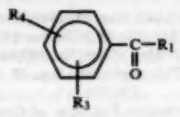
4,486,605

METHOD FOR PRODUCING AROMATIC CARBONYL COMPOUNDS

Haruhisa Harada, and Hiroshi Maki, both of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

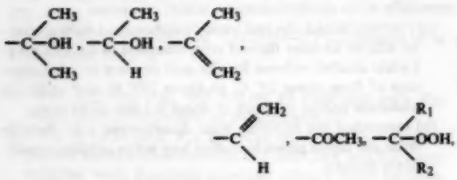
Filed Jan. 7, 1983, Ser. No. 456,455
Claims priority, application Japan, Jan. 7, 1982, 57-1573; Aug. 12, 1982, 57-140658; Oct. 28, 1982, 57-190567
Int. Cl.³ C07C 45/53
U.S. Cl. 568—311 6 Claims

1. A method for producing an aromatic carbonyl compound represented by the formula (B)-1 or (B)-2:

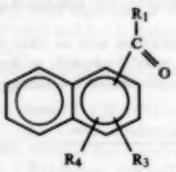


(B)-1

wherein R_1 is a hydrogen atom or a methyl group; and R_3 and R_4 are each a hydrogen atom, a (C_1–C_3)alkyl group,

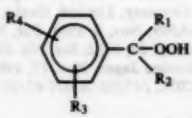


—COOH, or a carboxylic acid ester group,



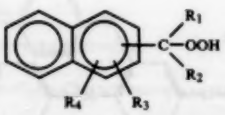
(B)-2

wherein R_1, R_3 and R_4 are the same as defined above, comprising decomposing a hydroperoxide represented by the formula (A)-1 or (A)-2:



(A)-1

wherein R_2 is a hydrogen atom or a methyl group; and R_1, R_3 and R_4 are the same as defined above.



(A)-2

wherein R_1, R_2, R_3 and R_4 are the same as defined above, in an inert gas atmosphere in the presence of an aqueous layer containing an iron salt, a copper salt and an acid.

4,486,606

PROCESS FOR PREPARING PINACOLONE

Gebhard Rauleder, Haan, and Helmut Waldmann, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 21, 1983, Ser. No. 477,470
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211306
Int. Cl.³ C07C 45/28
U.S. Cl. 568—385 12 Claims

1. In a process for preparing pinacolone by contacting 2,3-dimethyl-2-butene with hydrogen peroxide in the presence of water and an acid, the improvement wherein as the sole acid there is employed maleic acid or fumaric acid or a mixture thereof and the process is conducted at a temperature of 20° to 90° C. and after substantial reaction of the hydrogen peroxide, the temperature is increased and pinacolone formed is azeotropically distilled off with water.

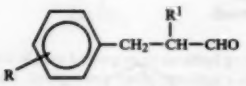
4,486,607

PROCESS FOR THE PRODUCTION OF PHENYL SUBSTITUTED PROPANAL

David Webb, Brentwood, England, assignor to Bush Boake Allen Limited, London, England

Continuation of Ser. No. 202,608, Oct. 31, 1980,. This application Jul. 12, 1982, Ser. No. 397,164
Claims priority, application United Kingdom, Jul. 9, 1980, 8022381
Int. Cl.³ C07C 45/00, 29/34, 29/44
U.S. Cl. 568—425 16 Claims

1. A process for the preparation of a 3(alkylphenyl) propanol having the formula:



I

wherein R represents a secondary or tertiary alkyl group having 3 or 4 carbon atoms and R^1 represents a hydrogen atom or a methyl group which comprises:

(i) reducing an aldehyde which is 3-phenyl-prop-2-enal or 3-phenyl-2-methyl-prop-2-enal to produce the corresponding 3-phenyl propanol;

(ii) reacting said 3-phenyl propanol in concentrated phosphoric acid of at least 85 percent concentration with an alkylating agent selected from the group consisting of alkanols and alkenes having 3 or 4 carbon atoms and oligomers of such alkenes so as to produce a product comprising a 3-(mono alkyl phenyl) propanol wherein the alkyl group is a secondary or tertiary alkyl group comprising 3 or 4 carbon atoms, and

(iii) oxidizing said 3(-mono alkyl phenyl) propanol so as to produce a 3-(monoalkylphenyl) propanol.

4,486,608

PREPARATION OF MONO- AND DIBROMO- OR CHLOROALDEHYDES

Zenon Lysenko, and Richard G. Pews, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 360,530, Mar. 22, 1982, abandoned. This application Apr. 22, 1983, Ser. No. 487,476
Int. Cl.³ C07C 45/63, 47/14
U.S. Cl. 568—466 12 Claims

1. A process for making a member of the group consisting of mono- and dichlorinated and mono- and dibrominated aldehydes which comprises treating a member of the group consisting of aldehydes having at least 3 carbon atoms and having hydrogens alpha to the carbonyl group and primary alcohols having at least 3 carbon atoms and having hydrogens in the 2-position with a member of the group consisting of bromine

and chlorine in an organic solvent containing a catalyst consisting essentially of a complex of HX and a member of the group consisting of N,N-dialkyl and cycloalkylformamide, where X is a counterion.

4,486,609

PHARMACOLOGICALLY ACTIVE 4-[2-HYDROXY-4-(SUBSTITUTED)PHENYL]NAPHTHALEN-2(1H)-ONES AND 2-OLS, DERIVATIVES THEREOF AND INTERMEDIATES THEREFOR

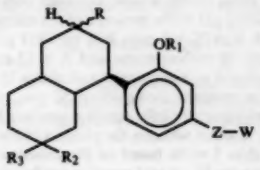
Michael R. Johnson, Gales Ferry, and Lawrence S. Melvin, Jr., Ledyard, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 244,435, Mar. 16, 1981, Pat. No. 4,331,602, which is a division of Ser. No. 189,402, Sep. 19, 1980, Pat. No. 4,285,867. This application Dec. 2, 1981, Ser. No. 326,952

Int. Cl.³ C07C *39/12*

U.S. Cl. 568—734 **5 Claims**

1. A compound having the formula



wherein

R is hydroxy or alkanoyloxy having from one to five carbon atoms;

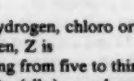
R_1 is hydrogen, benzyl or R_1' wherein R_1' is alkanoyl having from one to five carbon atoms, $P(O)(OH)_2$ and mono- and disodium and potassium salts thereof, or $—CO(CH_2)_2COOH$ and the sodium and potassium salts thereof;

R_2 when taken individually is hydrogen;

R_3 when taken individually is hydroxymethyl;

R_2 and R_3 when taken together are methylene;

W is hydrogen or



wherein W_1 is hydrogen, chloro or fluoro;

when W is hydrogen, Z is

(a) alkylene having from five to thirteen carbon atoms; or

(b) $—(alk_1)_m—O—(alk_2)_n—$ wherein each of (alk_1) and (alk_2) is alkylene having from one to thirteen carbon atoms; each of m and n is 0 or 1; with the provisos that the summation of carbon atoms in (alk_1) plus (alk_2) is not less than five or greater than thriteen; and at least one of m and n is 1;

when W is other than hydrogen, Z is

(a) alkylene having from three to eight carbon atoms; or

(b) $—(alk_1)_m—O—(alk_2)_n—$ wherein each of (alk_1) and (alk_2) is alkylene having from one to eight carbon atoms; each of m and n is 0 or 1; with the provisos that the summation of carbon atoms in (alk_1) plus (alk_2) is not less than three or greater than eight; and at least one of m and n is 1.

4,486,610

PURIFICATION OF 2,4,4'-TRICHLORO-2'-HYDROXYDIPHENYLETHER SOLVENT EXTRACTION

Richard B. Lund, Jackson, Ala., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 7, 1983, Ser. No. 464,531

Int. Cl.³ C07C *41/38*

U.S. Cl. 568—637 **6 Claims**

1. In the process for preparing and isolating 2,4,4'-trichloro-2'-hydroxydiphenylether which comprises the steps of diazotizing and hydrolyzing 2,4,4'-trichloro-2'-aminodiphenylether to form an aqueous mixture of said hydroxyether and 2,4,8-trichlorodibenzofuran and other chlorinated by-products, the improvement which includes the steps of separating said hydroxydiphenyl ether from said dibenzofuran and said other non-phenolics by extracting same from said aqueous mixture by dissolving said furan and other non-phenolics in a polychlorinated lower aliphatic hydrocarbon solvent of 3 or less carbon atoms or an aromatic or chlorinated aromatic hydrocarbon solvent and leaving an aqueous solution of substantially 2,4,4'-trichloro-2-hydroxyphenyl ether as sodium salt.

4,486,611

ISOLATION OF DIHYDROXYBENZENE-MONOETHERS FROM REACTION MIXTURES

Manfred Lenthe, Odenthal; Udo Allenbach, Cologne; Gerhard Büttner, Pulheim, and Karl-Friedrich Christmann, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 412,643

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136810

Int. Cl.³ C07C *41/38*

U.S. Cl. 568—653 **6 Claims**

1. A process for obtaining a dihydroxybenzene-monoether comprising etherifying pyrocatechol in a solvent comprising an alcohol, a ketone, a dipolar aprotic solvent or a polyhydroxyalkyl ether, or a mixture thereof with water, interrupting the reaction so as to obtain a reaction mixture containing solvent, ether and unreacted pyrocatechol, and contacting the reaction mixture with at least one aliphatic or cycloaliphatic hydrocarbon which is not miscible or only partially miscible with the reaction mixture, which has at least 5 carbon atoms and which boils between about 80° and 300° C. so as to form two phases, the ether selectively entering the hydrocarbon phase.

4,486,612

METHOD OF PREPARING TERTIARY CARBINOLS

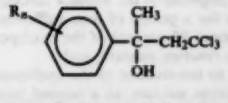
R. Garth Pews, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 23, 1983, Ser. No. 478,183

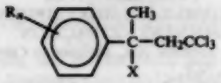
Int. Cl.³ C07C *33/46*

U.S. Cl. 568—812 **13 Claims**

1. A method of preparing a tertiary carbinol of the Formula



wherein n represents the integers 0, 1 or 2 and R represents C_1–C_4 alkyl, C_1–C_4 alkoxy, Cl, Br, F or I, the method comprising contacting a tertiary halide of the Formula,



wherein X is Cl, Br or I and R and n are as defined above, with water in the presence of an effective catalytic amount of an emulsifying agent having an HLB value of 10 or greater and at a temperature between about 15° C. and about 80° C.

4,486,613

PROCESS FOR HYDROXYLATING OLEFINS USING AN OSMIUM CARBONYL CATALYST

Robert C. Michaelson, Waldwick; Richard G. Austin, and Donald A. White, both of Ridgewood, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 20, 1982, Ser. No. 420,137
Int. Cl.[3] C07C *29/04, 31/18, 31/22, 31/42*
U.S. Cl. 568—860 15 Claims

1. A process for hydroxylating olefins which comprises reacting in admixture water, at least one olefinic compound having at least one ethylenic unsaturation, and an oxidant selected from the group consisting of organic hydroperoxide, H_2O_2 and oxygen in the presence of a catalyst composition in a manner and under conditions sufficient to hydroxylate at least one of said ethylenically unsaturated groups, said catalyst compositions (a) being capable of catalyzing said hydroxylation reaction and (b) comprising, as initially added to said admixture, at least one unsupported osmium carbonyl compound and optionally at least one co-catalyst.

4,486,614

ANIONIC POLYMERIZATION OF CIS- AND TRANS-1,3-PENTADIENE FROM A MIXTURE OF SATURATED AND UNSATURATED HYDROCARBONS

Felipe A. Donate; John W. Bozzelli, and Kent S. Dennis, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 25, 1983, Ser. No. 517,171
Int. Cl.[3] C07C *1/16, 2/74*
U.S. Cl. 585—10 27 Claims

1. A method for anionically preparing polymers of 1,3-pentadiene from a distillation cut available as a by-product of crude oil cracking operations, said distillation cut being a mixture of saturated and unsaturated hydrocarbon molecules, at least 50 percent by weight of said molecules having 5-carbon atoms per molecule, said mixture comprising cis-1,3-pentadiene, trans-1,3-pentadiene, cyclopentadiene and other 5-carbon atom molecules, the method comprising:

(a) forming a reaction mixture by contacting, in an inert atmosphere, the mixture of saturated and unsaturated hydrocarbon molecules with an amount of an anionic polymerization initiator, the amount being sufficient to (i) inactivate the chain termination function of generally all cyclopentadiene contained in the mixture and (ii) initiate polymerization of 1,3-pentadiene;

(b) heating the reaction mixture to a first temperature, said first temperature being sufficiently high to cause the cyclopentadiene contained in the reaction mixture to react with the initiator to form a reaction product which does not interfere with polymerization of 1,3-pentadiene and maintaining dispersal of the initiator throughout the reaction mixture for a period of time sufficient to inactivate more than about 90 percent of the cyclopentadiene contained in the reaction mixture; and

(c) subsequent to inactivation of the cyclopentadiene, heating the reaction mixture to a second temperature, the second temperature being sufficiently high to initiate polymerization of 1,3-pentadiene, and maintaining dispersal of the initiator throughout the reaction mixture for a period of time sufficient to attain a desired polymer yield.

4,486,615

PREPARATION OF LINEAR OLEFIN PRODUCTS

Arthur W. Langer, Jr., Watchung, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 330,596, Dec. 14, 1981, Pat. No. 4,442,309, which is a continuation-in-part of Ser. No. 179,655, Aug. 20, 1980, Pat. No. 4,409,414, which is a continuation of Ser. No. 10,527, Feb. 9, 1979, abandoned, which is a division of Ser. No. 882,946, Mar. 2, 1978, Pat. No. 4,396,788, which is a continuation of Ser. No. 232,618, Mar. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 783,699, Dec. 13, 1968, Pat. No. 3,662,021, which is a continuation-in-part of Ser. No. 562,089, Jul. 1, 1966, abandoned, which is a continuation-in-part of Ser. No. 428,836, Jan. 28, 1965, abandoned, which is a continuation-in-part of Ser. No. 55,845, Sep. 8, 1960, Pat. No. 3,168,588. This application Dec. 29, 1982, Ser. No. 454,379
The portion of the term of this patent subsequent to Apr. 29, 1986, has been disclaimed.
Int. Cl.[3] C07C *2/22*
U.S. Cl. 585—523 8 Claims

1. A process for preparing and controlling the $\overline{M}_n$ in the range of 70 to 700 of a reaction product comprising at least 90 mole % linear alpha olefins which comprises polymerizing an ethylene containing gas in the presence of the reaction product of a $ZrCl_4$ with R_2AlX, wherein R is an alkyl group having about 1 to about 20 carbon atoms and X is Cl or Br, in the presence of a diluent at a temperature of about 75° to 200° C. and an ethylene pressure above about 50 psia, wherein the mole ratio of ethylene to olefin reaction product is above 0.8 throughout the reaction wherein the product olefin concentration is greater than 5 wt.% based on the diluent and reaction product, wherein the $\overline{M}_n$ of said reaction product is controlled by the molar ratio of said $R_2AlX/ZrCl_4$, said molar ratio being between 100:1 to 0.1:1.

4,486,616

REJUVENATION OF DESELECTIVATED ALKYLATION CATALYST

Chin-Chiun Chu, North Brunswick, and Warren W. Kaeding, Westfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 102,729, Dec. 13, 1979, abandoned. This application May 12, 1983, Ser. No. 493,853
Int. Cl.[3] C07C *2/68;* B01J *29/38, 29/28*
U.S. Cl. 585—466 20 Claims

1. In a process whereby aromatic hydrocarbon reactants are catalytically converted via alkylation, to a dialkylbenzene product containing the para-dialkylbenzene isomer of said product in a reaction zone under aromatic hydrocarbon conversion conditions in the presence of a catalyst comprising a crystalline zeolite having a Constraint Index within the approximate range of 1 to 12 and a silica to alumina mole ratio of at least 12, said zeolite being chemically modified by incorporation thereinto of a para-selectivity-enhancing oxide compound, the improvement which comprises:

effecting reselectivation of said catalyst, to restore catalytic para-selectivity which has diminished during conversion of said aromatic hydrocarbon reactants, by contacting said chemically modified, zeolite-based catalyst with a carboxylic acid or an anhydride thereof at a temperature of between about 0° C. and 100° C., after said para-selectivity diminishing conversion has occurred.

13. In a process whereby aromatic hydrocarbon reactants are catalytically converted via alkylation, to a dialkylbenzene product containing the para-dialkylbenzene isomer of said product in a reaction zone under aromatic hydrocarbon conversion conditions in the presence of a catalyst comprising a crystalline zeolite having a Constraint Index within the ap-

proximate range of 1 to 12 and a silica to alumina mole ratio of at least 12, said zeolite being chemically modified by incorporation thereinto of a para-selectivity-enhancing oxide compound, the improvement which comprises:

effecting enhancement of the inherent para-selectivity of said catalyst by contacting said chemically modified, zeolite-based catalyst with a carboxylic acid or an anhydride thereof at a temperature between about 0° C. and 100° C., prior to utilizing said catalyst to promote conversion of said aromatic hydrocarbon reactants.

20. The process of claim 13 wherein the inherent para-selectivity of said chemically-modified, zeolite-based catalyst is further enhanced by heating said catalyst to a temperature of between about 250° C. and about 650° C. after contact of said catalyst with said carboxylic acid or anhydride thereof and prior to use of said catalyst in promoting conversion of aromatic hydrocarbons.

4,486,617

PREPARATION OF C_2–C_4-OLEFINS FROM METHANOL/DIMETHYL ETHER

Wolfgang Hoelderich; Wolf D. Mross, both of Frankenthal, and Matthias Schwarzmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 18, 1983, Ser. No. 553,122

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243520

Int. Cl.³ C07C *1/20*

U.S. Cl. 585—640 **4 Claims**

1. A process for the preparation of C_2–C_4-olefins by catalytic conversion of methanol and/or dimethyl ether in the presence of a zeolite catalyst at elevated temperatures, wherein the catalyst used is a borosilicate zeolite which is treated with hydrogen fluoride, molded together with an amorphous aluminosilicate as a binder and then treated with hydrochloric acid.

4,486,618

PROCESS FOR SEPARATING C_6 OLEFIN HYDROCARBONS

Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 437,771, Oct. 29, 1982, abandoned, which is a continuation-in-part of Ser. No. 288,570, Jul. 30, 1981, Pat. No. 4,367,364. This application Aug. 12, 1983, Ser. No. 522,759

Int. Cl.³ C07C *7/13*

U.S. Cl. 585—829 **6 Claims**

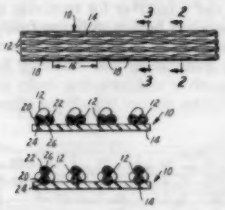
1. A process for separating a normal C_6 olefin hydrocarbon from a mixture of the same with another structural class of hydrocarbon selected from the cyclic olefin hydrocarbons having six carbon atoms per molecule and the C_6 branched chain olefin hydrocarbons, which process comprises contacting said mixture at separation conditions with a molecular sieve comprising crystalline silica having a silica to alumina mole ratio of at least 12 to effect the selective retention of said normal C_6 olefin hydrocarbon by said molecular sieve, removing the components of said mixture not retained from contact with said molecular sieve, and recovering said normal C_6 hydrocarbon by displacement at displacement conditions with a displacement material consisting essentially of butene-1 or pentene-1.

4,486,619

UNIFORM TWISTED WIRE PAIR ELECTRICAL RIBBON CABLE

Richard D. Trine, Willernie; Lloyd S. Vasilakes, North St. Paul and Murray Olyphant Jr., Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 12, 1983, Ser. No. 494,055
Int. Cl.³ H01B 11/04
U.S. Cl. 174—34 14 Claims



1. An electrical ribbon cable, comprising:

a plurality of longitudinally extending, individually insulated wire pairs adjacent each other, each wire in each of said plurality of wire pairs being twisted together; and

an insulator bonded to said plurality of wire pairs, said insulator for holding said plurality of wire pairs in a fixed planar relationship;

each wire of each one of said plurality of wire pairs being individually bonded to said insulator during only a portion of each individual twist;

said plurality of wire pairs having a uniform twist period and having positions of the crossover points of corresponding ones of said plurality of wire pairs being transversely aligned along said electrical ribbon cable;

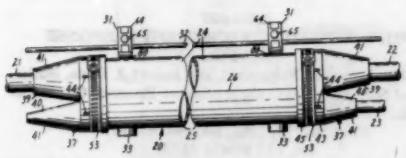
whereby said plurality of wire pairs of said electrical ribbon cable may be easily mass terminated with electrical ribbon cable connecting equipment.

4,486,620

AERIAL COMMUNICATIONS CABLE SPLICE CLOSURE AND END CAP USEFUL THEREWITH

James H. Ball, St. Paul; Ronald C. Houts, Vadnais Heights, and Phillip R. Schaetzel, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 1, 1983, Ser. No. 481,155
Int. Cl.³ H02G 15/113
U.S. Cl. 174—41 14 Claims



10. An end cap adapted for use with a communications cable splice assembly comprising a pair of external, parallel, longitudinal walls which define a narrow channel therebetween, a base portion having a plurality of deformable external longitudinal ribs therearound, said base portion being joined to a cable-receiving portion having at least one conical cable-receiving port.

12. An aerial closure for a communications cable splice comprising:

a hollow body having separate longitudinal top and bottom sections adapted to mate with one another;

electrically conductive hanger means connected to said top body section and projecting externally therefrom; and

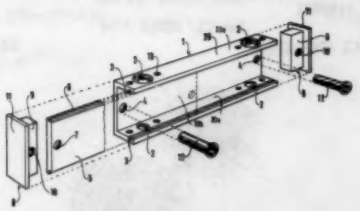
end caps adapted to be received by the ends of said body, said end caps each comprising (i) a pair of external, parallel, longitudinal walls which define a narrow channel therebetween, (ii) a cable-receiving portion containing at least one conical cable-receiving port and (iii) a base portion having a plurality of deformable external, longitudinal ribs disposed therearound, a first end adapted to fit over the end of said body, and a second end attached to said cable-receiving portion.

4,486,621

HOUSING FOR A COAXIAL DIRECTIONAL COUPLER

Bernard Morisot, Paris, and Michel Taton, Asnières, both of France, assignors to Les Cables De Lyon, Clichy, France

Filed May 10, 1982, Ser. No. 376,865
Claims priority, application France, May 8, 1981, 81 09176
Int. Cl.³ H05K 5/00
U.S. Cl. 174—50 2 Claims



1. A housing for a coaxial directional coupler, said housing comprising a channel-section housing body forming opposed flanges, each of said flanges of said channel-section body terminating in rims and having two openings, with the openings in one flange being opposite to the corresponding openings in the other flange, a cover having tongues, matching grooves for said tongues provided within said flanges near the rim of each flange, and facing each other, said cover closing the gap between the rims of the flanges, and two end pieces closing the ends of the assembly formed by the housing body and the cover, each of said end pieces comprising a body inserted between the channel-section housing body and said cover, and a rim which presses against the ends of the housing body and said cover.

4,486,622

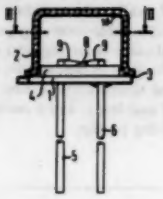
CASE FOR A SEMICONDUCTOR COMPONENT

Joachim Dathe, Munich, and Erich Schmidhuber, Regensburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Division of Ser. No. 383,194, May 28, 1982, abandoned, which is a continuation of Ser. No. 149,341, May 13, 1980, Pat. No. 4,345,108. This application Jul. 1, 1983, Ser. No. 510,382
Claims priority, application Fed. Rep. of Germany, May 14, 1979, 2919404
Int. Cl.³ H05K 5/04
U.S. Cl. 174—52 H 3 Claims

1. A case for a semiconductor component, comprising at least two parts, one of said parts being a cap, at least said cap

having a low hydrogen permeability and a weak catalytic effect for an oxyhydrogen gas reaction, said cap comprising



nickel, and said parts having inner surfaces, and including a plating formed of gold disposed on said inner surfaces.

4,486,623

HIGH-FLEX INSULATED ELECTRICAL CABLE

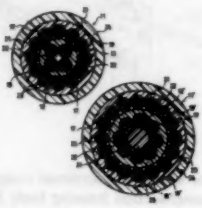
Jürgen Ploppa, Pfullingen, Fed. Rep. of Germany, assignor to H. Stoll GmbH and Company, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,900

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3150031

Int. Cl.³ H01B 7/04

U.S. Cl. 174—113 R **12 Claims**



1. A high-flex insulated electrical cable, comprising:

a plurality of multi-strand layers, arranged concentric with one another, disposed in long lay at the same angle of twist, each layer having a plurality of twisted strands arranged adjacent to one another, with each said strand defining an outer peripheral area and with adjacent said strands defining a gusset region between them, and

a resiliently deformable soft plastic injection coating for each layer, each said coating extending over the outer peripheral areas into the gusset regions defined by the strands of its respective said layer, said resiliently deformable soft plastic coatings being sufficiently resiliently deformable so as not to obstruct the extension or compression of the cable during torsional stressing thereof.

4,486,624

MICROPROCESSOR CONTROLLED RADIOTELEPHONE TRANSCEIVER

Larry C. Puhl, Sleepy Hollow, and John F. Smedinghoff, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 15, 1980, Ser. No. 187,304

Int. Cl.³ H04M 1/00

U.S. Cl. 179—2 EB **13 Claims**

1. A radiotelephone comprising, in combination:

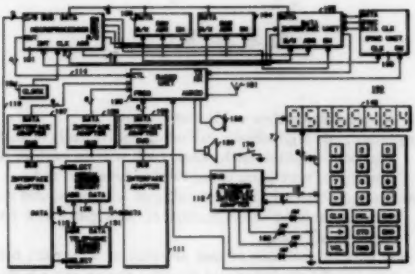
serial data bus means for carrying bidirectional data signals, said data bus means including two forward data signal lines together carrying self-clocking data signals and including a return data signal line for carrying return data signals;

keyboard means including a plurality of keys;

display means including a plurality of display elements;

keyboard and display interface means coupled to the serial data bus means, keyboard means and display means for receiving data signals from the forward data signal lines and applying the received data signals to the elements of the display means, sampling the keys of the keyboard means and applying a return data signal representative of the sampled keys to the return data signal line;

a radio transceiver having a transmitter for transmitting audio signals and a receiver for receiving audio signals, said radio transceiver further including frequency synthesizing means responsive to a frequency control signal for providing the transmitting and receiving frequencies of the radio transceiver and including audio control means responsive to audio control signals for attenuating audio



signals transmitted by and received by the radio transceiver;

radio interface means coupled to the serial data bus means and radio transceiver for receiving data signals including frequency control signals and audio control signals from the forward data signal lines and applying the received frequency control signals and audio control signals to the radio transceiver for controlling the transmitting and receiving frequencies and transmitted and received audio signals of the radio transceiver;

processing means coupled to the serial data bus means for applying to the forward data signal lines data signals for display in the elements of the display means and data signals for controlling the frequency synthesizing means and audio control means of the radio transceiver, and receiving from the return data signal line data signals representative of the sampled keys of the keyboard means.

4,486,625

COMPUTERIZED MEASUREMENT RESPONSE SYSTEM

B. Franklin Reinauer, Ridgewood, and Robert J. Dydo, Butler, both of N.J., assignors to Clear Meadow Research Co., Hackensack, N.J.

Filed Sep. 29, 1982, Ser. No. 427,977

Int. Cl.³ H04M 11/04

U.S. Cl. 179—2 A **10 Claims**

1. An alarm system for installation at a utility customer's location for informing a utility central office when the consumption of fuel in a tank has been depleted to a predetermined alarm level, comprising:

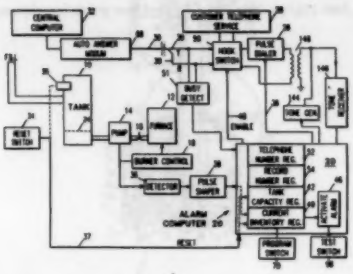
means for calculating a pump run time number representative of the number of cycles of electricity consumed in operating an electric pump for displacing the fuel in said tank to a predetermined alarm level;

memory means for storing said pump run time number;

detecting means connected to the electrical supply to said pump for detecting the number of cycles of electricity consumed by said pump during pump operation;

counter means connected to said detector means for counting the number of detected electrical cycles until the counted number is equivalent to the pump run time number stored in said memory means to thereby provide an alarm signal; and

telephone dialer means connected to the telephone service and responsive to said alarm signal from said counter means, said telephone dialer means including means re-



sponsive to said alarm signal for automatically calling from the customer telephone service to a central computer modem in said central office for informing said computer modem of said alarm condition whereby a delivery of fuel is requested to fill said tank;

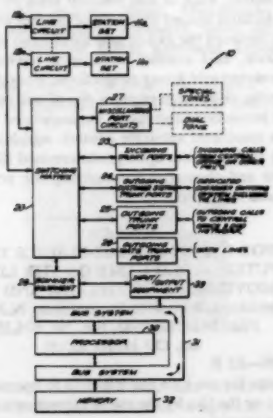
whereby the central computer modem is automatically informed over the customer telephone lines of the alarm condition at its customer storage tank indicating that a delivery of fuel is necessary.

4,486,626

METHOD OF AND SYSTEM FOR LIMITING ACCESS TO A GROUP OF TELEPHONE TRUNKS

Joylee E. Kohler, Northglenn, Colo., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Jun. 29, 1982, Ser. No. 393,278
Int. Cl.³ H04M *3/38, 3/42*
U.S. Cl. 179—18 DA **5 Claims**



1. In a telephone switching system having a plurality of trunk groups arranged in a particular hierarchy, wherein one or more of the trunk groups are identified, a method of seizing an idle trunk in an identified trunk group in the hierarchy when a user of the switching system initiates a call requiring the idle trunk comprising the steps of:

(a) accessing the first group of trunks according to the arranged hierarchy;

(b) sequencing through each trunk in the accessed group to determine if any trunk in the group is idle;

(c) accessing the next group of trunks according to the arranged hierarchy if no idle trunk is found in the previously sequenced group of trunks until an idle trunk is sequenced and found;

(d) selecting the idle trunk when an idle trunk is found;

(e) returning a warning tone to the user when the selected trunk is in one of the identified trunk groups;

(f) seizing the selected trunk only if the user has dialed a predetermined code after the warning code has been returned to the user; and

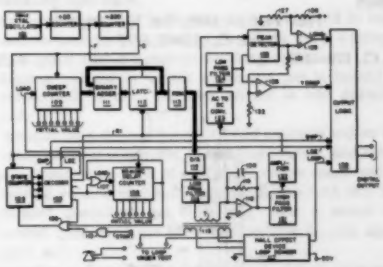
(g) terminating the call if the user does not dial the predetermined code.

4,486,627

CABLE LOAD STATUS DETECTOR

Robert H. Beeman, Berkeley, and Stanley J. Chmura, Elmhurst, both of Ill., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Dec. 13, 1982, Ser. No. 449,339
Int. Cl.³ H04B *3/46*
U.S. Cl. 179—175.3 R **10 Claims**



1. A system for testing a transmission line to determine if it is loaded or unloaded comprising:

a digitally synthesized sweep frequency generating means having an output and comprising:

a frequency standard oscillator;

a first divider operated from said standard oscillator to output a first operating pulse output; and

a second divider operated from said first operating pulse output to output a second operating pulse output;

a sweep counter operated to output a count in response to said second operating pulse output;

a binary adder including a first input operatively connected to said sweep counter output and a second input and including an output;

a latch operatively connected to receive and temporarily store said binary adder output and including a latch output;

said latch output operatively connected to said binary adder second input, whereby said latch is incremented by an amount equal to said sweep counter output;

memory means operatively connected to said latch output to output a digital sine wave; and

digital to analog converter means operated in response to said digital sine wave to produce an analog signal of a corresponding frequency as an output;

line coupling means connecting said sweep frequency generating means output to a line to be tested;

admittance measuring means connected to said line coupling means and operated to output an indication of the admittance level during the frequency sweep of said sweep

frequency generating means; and wherein said admittance measuring means comprises:

a first signal amplification means comprising a first amplifier having an input and an output with said line coupling means connected to said first amplifier input;

a high frequency pass filter including input and output terminations, with said input termination connected to said first amplifier output;

a second amplifier having an input and an output with said high frequency pass filter output termination connected to said second amplifier input;

an alternating current to direct current conversion means operatively connected to said second amplifier output to produce a direct current output corresponding to an input alternating current level;

a peak detector operated upon receipt of a signal to retain an indication of the highest input signal level; and

other connect means operative to operatively connect said peak detector to said alternating current to direct current conversion means output;

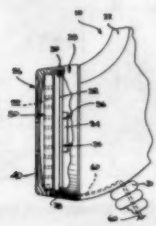
admittance evaluation means connected to said admittance measuring means and operated to indicate a loaded line upon said admittance measuring means measuring a dip in the admittance level.

4,486,628

BACTERIA DESTROYING APPARATUS FOR USE WITH VOICE COMMUNICATION SYSTEMS

Virley P. Thompson, 6700 Franklin Ave., Los Angeles, Calif. 90028

Filed Feb. 23, 1981, Ser. No. 236,906
Int. Cl.³ H04R 1/12
U.S. Cl. 179—185 8 Claims



1. An improved telephone system having a handset with a bacteria destroying means associated with the mouthpiece of said handset, said telephone system comprising:

(a) a telephone base;

(b) a handset operatively connected to said base;

(c) a mouthpiece on said handset having an outer casing, said outer casing having a perforated wall permitting passage of sound waves;

(d) a diaphram located within said handset and located in proximity to said perforated wall of said casing;

(e) a thin flat radiation generating disc located between said diaphram and the perforated wall on the outer casing of said handset, said disc having means capable of generating radiation in a wave length range which is effective to destroy said bacteria when energized and which radiation will contact said mouthpiece and the perforated wall of said casing, said disc also having a plurality of apertures therein permitting passage of sound waves therethrough to contact said diaphram;

(f) a conductive ring section mounted on said disc;

(g) electrically conductive means operatively connected to said conductive ring section on said disc through said handset to cause energization of the means generating radiation and thereby causing generation of the radiation to be incident on the perforated wall of said casing; and

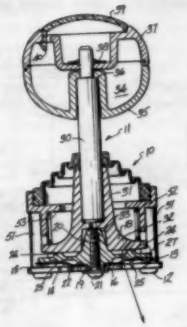
(h) a reflecting foil on the side of said disc closest to said diaphram reflecting the generated radiation toward said perforated wall and which reflecting foil still permits passage of sound wave to contact said diaphram.

4,486,629

JOYSTICK CONTROLLER

Stephen M. Sledesky, Hartford, Conn., assignor to Coleco Industries, Inc., Hartford, Conn.

Filed Jul. 18, 1983, Ser. No. 514,598
Int. Cl.³ H01H 25/04
U.S. Cl. 200—6 A 8 Claims



1. A controller for causing switch closures in response to X-Y coordinate movements, said controller comprising a base member including a substrate having a plurality of switch contacts equiangularly spaced about a central axis, a handle member having a longitudinal axis normally coincident with said central axis and having a lower annular flange extending radially therefrom, means supporting said handle thereon for tilting movement radially of the axis of the handle, said flange upon tilting of said handle being effective to close one of said contacts, said supporting means comprising an upwardly extending pivot providing member, a recess defined in said handle and receiving said pivot providing member, whereby said handle may tilt on said pivot providing member, a spring contact member carried on said substrate, said contact member having a plurality of radially extending contact arms, each overlying one of said substrate contacts and arranged to be deflected into electrical contact with one of said contacts by said flange, a resilient member disposed between said contact member and said flange and having a like number of resilient arms as said contact member each disposed over an arm of said contact member, each of said resilient arms having upper and lower projections spaced inwardly of the free ends thereof and positioned between the axis of said handle and said contacts on said substrate, said contact arms each having an aperture therein receiving said lower projections, whereby upon tilting of said handle, said flange engages one of said resilient arms on said upper projections and causes the associated contact arm to contact an associated substrate contact, said lower projection contacting said substrate upon predetermined tilting motion of said handle and thereafter transmitting the pressure of said flange to said substrate.

4,486,630

DEVICE FOR USE BY QUADRI-PLEGICS TO OPERATE A COMPUTER, VIDEO GAME OR THE LIKE BY THE USE OF MOVEMENTS OF THE JAW AND EYEBROWS

John E. Fetchko, 129 W. 46th St., Bayonne, N.J. 07002

Filed Mar. 11, 1983, Ser. No. 474,357
Int. Cl.³ H01H 35/00
U.S. Cl. 200—52 R 19 Claims

1. A device for use by a quadriplegic to operate a computer, video game or the like by the use of movements of the jaw and eyebrows comprising:

a. a semi-circular headset support bar for fitting across the top of a human head;

b. two earpieces, one at each end of the headset support bar, for fitting over ears;

c. an adjustable chin strap detachably mounted to the earpieces;

d. a chin cup formed with a concavity to accomodate a chin, attached to the center of the chin strap;
e. a chin bar horizontally mounted on the chin cup, extending outwardly to at least the ends of the earpieces;
f. a chin bar electrode mounted on one end of the chin bar;
g. a pliable boom extending downwardly and forwardly from an earpiece to one end of the chin bar;
h. a chin bar electrode housing mounted on the distal end of the boom, said housing being formed with a plurality of peripheral sides and having a left end, a right end, top and

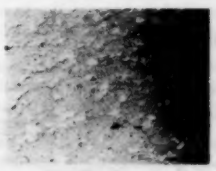
bottom, one end being formed with a channel to provide an opening through which the chin bar electrode can be inserted into the interior of the housing; and
i. a plurality of electrodes mounted on the inner faces of the sides of the electrode housing, the chin bar electrode and each individual chin bar housing electrode being electrically connected to complete a circuit to actuate a computer signal when the chin bar electrode contacts a housing electrode, contact being made by the movement of the user's chin.

4,486,631

CONTACT FOR VACUUM CIRCUIT BREAKER

Eizo Naya, Ibaragi; Toshiaki Horiuchi, Settsu; Yasushi Takeya, Osaka; Kouichi Inagaki, Itami; Michinosuke Demizu, Takarazuka, and Mitsuhiro Okumura, Sakai, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1982, Ser. No. 452,052
Claims priority, application Japan, Dec. 28, 1981, 56-215827
Int. Cl.³ H01H *33/66*
U.S. Cl. 200—144 B **4 Claims**



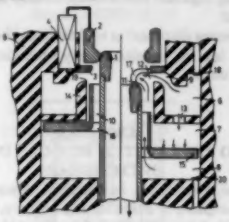
1. An alloy metal contact for a vacuum circuit breaker consisting essentially of copper as a first component and two or more elements of the group of chromium, molybdenum, and tungsten as the other components, each of said other components being contained in an amount effective to produce a contact having high breakdown voltage and high electrical current characteristics, when used as a component of a vacuum circuit breaker, but not in amounts higher than 40% by weight of the alloy.

4,486,632

HIGH-VOLTAGE POWER SWITCH

Lutz Niemeyer, Birr; Blaise Perrenoud, La Neuveville; Klaus Ragaller; Ekkehard Schade, both of Wettingen, and Rolf Schaumann, Hüttikon, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jun. 11, 1982, Ser. No. 387,465
Claims priority, application Switzerland, Jun. 12, 1981, 3860/81
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A **3 Claims**



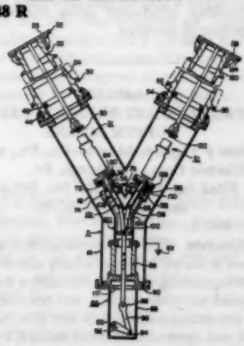
1. A gas-filled high-voltage switch comprising:
first and second relatively movable contacts that define a quenching path in which an arc burns during a current-breaking operation;
a compression device having a piston connected to one of said contacts for compressing quenching gas in a compression space during a current-breaking operation;
a heating volume in which quenching gas is heated and pressurized by the heat from an arc in said quenching path;
an annular duct defined by one of said contacts and an insulating member connected to said one contact, said annular duct connecting each of said compression space and said heating volume with said quenching path such that compressed quenching gas from said space is mixed with heated quenching gas from said volume in said annular duct; and
an annular wall separating the openings of said compression space and said heating volume and having an edge that projects into said annular duct.

4,486,633

HIGH-VOLTAGE Y-SHAPED DEAD TANK CIRCUIT INTERRUPTER

Ben J. Calvino, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 5, 1982, Ser. No. 405,479
Int. Cl.³ H01H *33/54*
U.S. Cl. 200—148 R **7 Claims**



1. A gas-insulated circuit interrupter comprising:
a Y-shaped, metal, grounded hollow tank comprising three

equal diameter pipes appropriately shaped to join together to form said Y shape, said pipes being gastightly secured to each other, said Y-shaped tank having a base leg and two diverging upstanding legs, said base leg being formed of one of said pipes with said base leg pipe end at the location of its joinder to the other two pipes being cut along a line at a right angle to the axial length of said base leg pipe;

an insulating gas disposed within said tank;

an arc-extinguishing unit disposed in each of said diverging upstanding legs and electrically serially connected to each other; and

operating means disposed in said tank and extending through said base leg for simultaneously operating said arc-extinguishing units.

4,486,634

GROUND TEST SWITCH FOR GAS INSULATED SWITCHGEAR

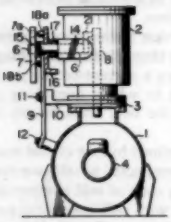
Haruji Nakano, Hitachiota, and Satoshi Miwada, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 426,085

Claims priority, application Japan, Sep. 30, 1981, 56-153626

Int. Cl.³ H01H *33/54, 33/50*

U.S. Cl. 200—148 R **5 Claims**



1. A ground test switch comprising:

a closed vessel enclosing a high-voltage conductor therein and filled internally with an electrical insulating medium;

a terminal plate electrically insulated from said closed vessel by an electrical insulator;

a movable contact member electrically connected to said terminal plate and arranged to be movable toward and away from said high-voltage conductor;

a detachable grounding conductor disconnectably electrically connecting said terminal plate to a member maintained at ground potential; and

locking means operative for locking said movable contact member against movement in response to detachment of said grounding conductor from connection with said ground-potential member.

4,486,635

HIGH-VOLTAGE CIRCUIT BREAKER WITH IMPROVED PUFFER MEANS

B. J. de Calvino y Teijeiro, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 5, 1983, Ser. No. 510,492

Int. Cl.³ H01U *33/88*

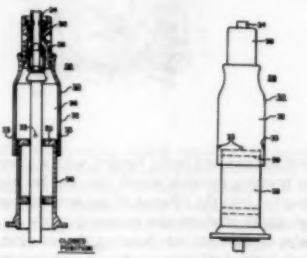
U.S. Cl. 200—148 A **10 Claims**

1. In combination with a gas-insulated type circuit interrupter that has a sealed housing which contains an insulating gas, an arc-extinguishing unit that includes a stationary contact and an elongated movable contact, and operating means which actuates the arc-extinguishing unit and places the contacts in closed-circuit and open-circuit relationships, a puffer assembly comprising;

a hollow piston component disposed in fixed spaced-apart position relative to said stationary contact and enclosing a portion of said elongated movable contact, said piston component having head means which supportingly accommodates the enclosed portion of said elongated movable contact, and

a puffer cylinder secured to and movable with the movable contact and structured and disposed to move over and along the stationary piston component when the movable contact is actuated, said puffer cylinder and piston component defining a puffer chamber for compressing insulating gas, during the displacement of the movable contact from its contact-closed position, and then directing the compressed gas into the arc bridging the parting contacts,

said puffer cylinder having integral means for relieving the back-pressure produced by the sudden expansion of the



puffer chamber during the return of the movable electrode and puffer cylinder to their contact-closed positions, said pressure-relief means comprising at least one aperture in the puffer cylinder which is so oriented that the aperture is obstructed and closed by the stationary piston during the major portion of the gas-compressing movement of the cylinder but is located beyond the piston and is thus automatically opened during the chamber-expansion movement of the cylinder.

4,486,636

BREAK CONTACT ARRANGEMENT FOR PULLOUT-TYPE SWITCHGEAR

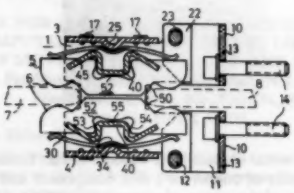
Günter Prietzel, and Rosemarie Shultz, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 19, 1983, Ser. No. 533,736

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1982, 3236495

Int. Cl.³ H01H *1/44*

U.S. Cl. 200—255 **11 Claims**



1. A break contact arrangement for pullout-type electrical switchgear for connecting conductors having oppositely-disposed ends, comprising

a first plurality of spaced, adjacently disposed contact seg-

ments each having opposed ends, a second corresponding plurality of spaced, contact segments each having opposed ends and each disposed opposite to a respective contact segment of said first plurality to define a corresponding plurality of oppositely disposed contact segments, respective ends of oppositely disposed contact segments cooperating to receive a respective conductor,

a one piece spacer disposed adjacent each plurality of contact segments having a central portion extending across the respective plurality of contact segments and a plurality of spacer arms extending outwardly from the central portion in the direction of the contact segments for a substantial distance along and between adjacent contact segments,

a one piece spring disposed adjacent each spacer having a plurality of spring arms extending into contact with respective contact segments, and

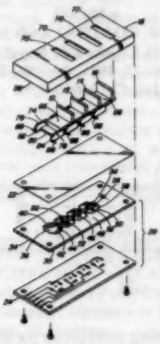
a holder for receiving the contact segments, the springs and the spacers in a cooperating manner with the spring arms tensioning the contact segments.

4,486,637

PUSHBUTTON SWITCH ASSEMBLY

Pak J. Chu, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jul. 2, 1982, Ser. No. 394,495
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—340 **9 Claims**



1. A pushbutton switch assembly, for a keyboard, comprising:

a base member;

a cover therefor, cooperating with the base member to form a chamber;

a plurality of switch units between the base member and the cover, each switch unit having a pair of superposed switch contacts, one of said pair of switch contacts being movable relative to the other of said pair to make or break contact;

a plurality of actuators housed in said chamber, one actuator for each switch unit, each actuator being in the form of a lever having a proximal part whereby the lever is hingedly mounted for pivotal movement relative to said base member, a distal part including a pushbutton part protruding through a corresponding hole in said cover, and, between said proximal part and said distal part, an intermediate part serving to displace said one of said pair of switch contacts when said pushbutton part is depressed;

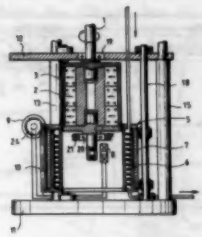
wherein said proximal part comprises an open box-like formation formed by an endwall, two sidewalls, and a bottom, such sidewalls being spaced apart along the pivotal axis of said lever, and said distal part comprises a flange projecting from an upper edge of said endwall and away from the hinge axis, the arrangement being such that the flange of one actuator projects across the hinge axis of the adjacent actuator and is accommodated between the sidewalls of such adjacent actuator, at least when the pushbutton part of said one actuator is depressed.

4,486,638

DEVICE FOR CONVERTING ROTATIONAL KINETIC ENERGY TO HEAT BY GENERATING EDDY CURRENTS

Michel C. de Bennetot, Brest, France, assignor to La Material Magnetique, France

Filed Oct. 13, 1982, Ser. No. 434,148
Claims priority, application France, Oct. 16, 1981, 81 19468
Int. Cl.³ H05B *6/10*
U.S. Cl. 219—10.51 **5 Claims**



1. An apparatus for heating a fluid, said apparatus comprising:

i. a cylindrical rotor structure having an axis of symmetry, a shaft mounted for rotation about said axis of symmetry and, distributed about said axis of symmetry, means for rotating said shaft, a plurality of elongate permanent magnet means having lines of magnetization radially extending about said axis of symmetry and each having an outer elongate polar surface which extends substantially along the whole length of a generatrix of the cylindrical rotor structure with the same polarity, the respective polar surfaces of the respective magnet means alternately having opposite polarities;

ii. a generally cylindrical heat-exchanging structure made of an electrically conducting material and coaxially mounted in a stationary angular position around said rotor structure, the lines of magnetization passing through the said heat-exchanging structure from each of said polar surfaces to the alternate polar surface;

iii. means for passing a fluid over the heat-exchanging structure for heating the fluid;

iv. displacing means for effecting relative displacement of the rotor structure with respect to the heat-exchanging structure in a direction parallel to the said axis of symmetry, whereby eddy currents having a variable intensity as a function of the said displacement are generated in the heat-exchanging structure and a variable resisting torque is exerted on the shaft, said apparatus further comprising: means for measuring the speed of rotation of the shaft and means, monitored by said measuring means, for controlling the displacing means as a function of the said speed of rotation.

4,486,639

MICROWAVE OVEN QUARTZ LAMP HEATERS

Robert A. Mittelstaedt, Burnsville, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Jul. 19, 1982, Ser. No. 399,387
Int. Cl.³ H05B *6/64*
U.S. Cl. 219—10.55 B **6 Claims**

1. A microwave oven comprising:

means for generating microwaves;

a cavity having at least three walls, a floor and a roof;

means for guiding said microwaves to said cavity;

a first metallic knob means mounted on a wall of said cavity

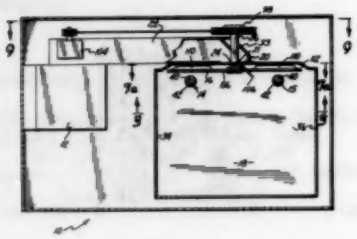
in a portion of said cavity where said microwaves are unobstructed by a microwave shield;

a second metallic knob means mounted in said cavity in a portion of said cavity where said mircowaves are unobstructed by a microwave shield;

an elongated quartz tube having two ends;

a pair of ceramic endcaps mounted one each on the ends of said quartz tube;

a pair of rivet means having an exterior end and an interior end mounted one each in said endcaps; the exterior end of each rivet means having a flared shape, the interior end of each rivet means having means for attachment of a metallic resistance element thereto;



an unshielded spiral metallic resistance element extending between the two rivet means inside said quartz tube and attached thereto;

one each of the flared ends of said rivet means removably and rotatably mounted on respective of said knob means;

power supply lead means for conducting electric current from the exterior of said cavity through a cavity wall to said first metallic knob means;

means for electically insulating said power supply lead means from said cavity wall; and

quarterwave choke means mounted on the exterior of said cavity and about said conductor and adapted to choke the exit of microwaves from said cavity through said power supply lead means.

4,486,640

COOKER/BAKER UTENSIL FOR MICROWAVE OVEN

Robert F. Bowen, Burlington, and Thomas J. Martel, North Reading, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Nov. 1, 1982, Ser. No. 438,209

Int. Cl.³ H05B *6/80*

U.S. Cl. 219—10.55 E **7 Claims**

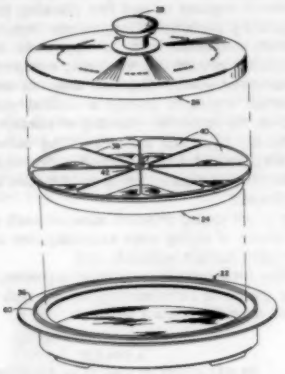
1. A utensil adapted for baking individual food bodies in a microwave oven, comprising:

a metallic pan having a bottom and highly thermoconductive partitions separating said food bodies into respective compartments;

a layer comprising ferrite bonded to the underside of said bottom of said pan, said layer absorbing microwave energy to provide heat for conducting through said bottom and said partitions to enter the sides of said food bodies;

a microwave transparent base for supporting said pan in an elevated position in said oven, said base contacting a peripheral region of said pan spaced from said layer;

a metallic cover supported by said base, said cover and said pan being positioned in substantially fixed horizontal alignment with respect to each other wherein a gap is defined between substantially parallel surfaces, said surfaces being the outer perimeter of said pan and a region of the inner surface of said cover; and



said cover having at least one aperture for venting steam from the interior defined by the combination of said pan and said cover.

4,486,641

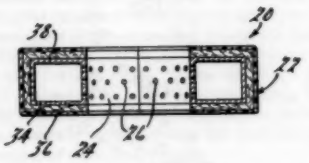
INDUCTOR, COATING AND METHOD

Robert S. Ruffini, 3551 Crooks Rd., Royal Oak, Mich. 48073

Filed Dec. 21, 1981, Ser. No. 333,121

Int. Cl.³ H05B *6/36*

U.S. Cl. 219—10.79 **10 Claims**



1. A method of coating an inductor for induction heating of a workpiece to improve directional control of magnetic flux of the inductor comprising:

(a) providing an inductor having a first surface for positioning adjacent the workpiece,

(b) covering said first surface with masking,

(c) heating the masked inductor,

(d) placing the masked inductor in a fluidized bed,

(e) applying to the masked inductor in the fluidized bed a coating composition comprised of a low reluctance material and a binder, and

(f) removing the coated inductor from the fluidized bed.

4,486,642

ELECTROEROSIVE CONTOUR-MACHINING METHOD

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Mar. 18, 1982, Ser. No. 359,489

Int. Cl.³ B23P *1/08*

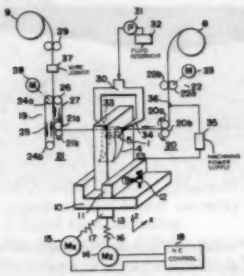
U.S. Cl. 219—69 W **7 Claims**

1. A method of contour-machining a workpiece by axially transporting an electrode wire through the workpiece disposed between a pair of wire support/guide members while advancing the workpiece relative to the traveling axis of the electrode wire in a displacement plane substantially orthogonal to the traveling axis to electroerosively cut a groove progressively along a programmed closed-loop path of a predetermined

contour whereby the workpiece is eventually severed into a central portion and a peripheral portion with respect to the contour-cut groove, the method comprising the steps of:

(a) positioning said workpiece and said wire support/guide members to enable the workpiece to move, relative to the traveling electrode wire, in a substantially vertical plane constituting said displacement plane and having a two-dimensional coordinate system;

(b) arranging said programmed closed-loop path on the positioned workpiece in said coordinate system and dividing it into an upper path and a lower path;



(c) threading said electrode wire through the positioned workpiece between the positioned wire support/guide members; and

(d) relatively displacing the positioned workpiece and wire support/guide members to advance the threaded traveling electrode wire continuously along said programmed closed-loop path in said coordinate system, from a starting position at an intermediate location along said upper path downwardly along a portion of said upper path, then along said lower path throughout and finally along the remaining portion of said upper path.

4,486,643

METHOD FOR SECURING ELECTRICALLY CONDUCTIVE WIRES TO A SURFACE

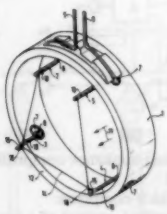
Heinz Gneiss, Ludwigsburg, and Peter Romann, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 382,453

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130634

Int. Cl.³ B23K *1/00*

U.S. Cl. 219—85 CM **4 Claims**



1. A method for securing an electrically conductive hot wire to a holder wire, which said hot wire is stretched over a plurality of holder wires in a carrier body for measuring a mass of a flowing medium, comprising applying by electroplating a layer of soldering material to a portion of said holder wires to which said hot wire is to be secured, stretching said hot wire over said plurality of holder wires with opposite ends of said hot wire in contact with said layer of solder materials on said holder wires to which said hot wire is to be secured, directing an electrical current through said holder wires with the soldered portions electroplated thereon to heat said holder wires in a manner limited in duration, until the melting temperature of the layer of soldering material has been attained and discontinue applying the current to said holder wires to permit a melted solder to solidify thereby forming a secure soldered connection between the holder wires and the hot wire.

4,486,644

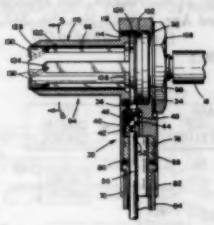
METHOD FOR CONDUCTING SMUT-FREE WELDING

Thomas E. Shoup, Amherst, Ohio, assignor to TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 440,177, Nov. 8, 1982, which is a continuation of Ser. No. 273,637, Jun. 15, 1981, which is a division of Ser. No. 75,751, Sep. 14, 1979,. This application Apr. 25, 1984, Ser. No. 602,638

Int. Cl.³ B23K *9/20*

U.S. Cl. 219—99 **5 Claims**



4. A method of welding a stud to a surface of a workpiece with the surface of the workpiece around the stud kept substantially free of contaminant coatings, said method comprising holding the stud against a surface of the workpiece, withdrawing the stud from the surface of the workpiece, establishing a welding arc between the stud and the surface of the workpiece, moving the stud back toward the surface of the workpiece, and directing a plurality of low velocity streams of gas and anti-smut liquid with a swirling motion toward the surface of the workpiece around but not at the location of the weld during the entire welding cycle, to cause the streams to move in a swirling pattern around the weld location to keep the area around the weld location free of smut.

4,486,645

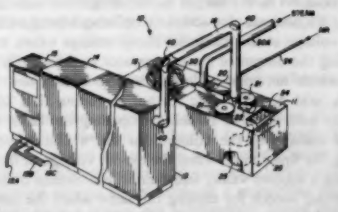
PROCESS FOR REMOVING PACKAGING MATERIALS FROM PACKAGED PRODUCTS

Glen J. Jedlicka, Scottsdale, and Curtis L. Baker, Phoenix, both of Ariz., assignors to Armour Food Company, Omaha, Nebr.

Continuation-in-part of Ser. No. 165,511, Jul. 3, 1980, abandoned. This application Aug. 28, 1981, Ser. No. 297,392

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LN **11 Claims**



1. A method of removing a carbon-based casing from a

heat-sensitive food product without causing substantial damage to said food product, comprising the steps of:

longitudinally transporting said food product in relative motion with a laser beam to vaporize an elongated slit in said casing; and

pulling said casing from said food product.

4,486,646

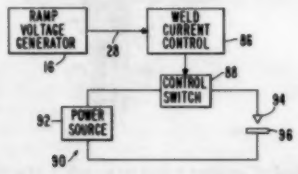
APPARATUS FOR GENERATING RAMP VOLTAGE FOR USE WITH ARC WELDER

Robert F. Frazier, 3129 Franklin, San Francisco, Calif. 94123

Filed Apr. 1, 1982, Ser. No. 364,173

Int. Cl.³ B23K 9/10

U.S. Cl. 219—130.1 9 Claims



1. A ramp voltage generator for use with an arc welder comprising: an integrator having an input and an output and means for providing an upramp voltage and a downramp voltage at the output of the integrator when currents of opposite polarity are, respectively, applied to the input of the integrator; a current generator having a pair of outputs for supplying a negative current and a positive current, respectively to the input of the integrator; an actuatable switch network for alternately coupling the current outputs of the current generator to the input of the integrator; and control logic including a reference voltage source coupled with the integrator and the switch network for actuating the switch network as a function of the output voltage of the integrator and to cause said output voltage to have upramp and downramp portions and to fluctuate at a frequency and above and below the reference voltage of said source to cause the output voltage of the integrator to be a substantially constant value after said output voltage has increased from a minimum value and reached a maximum value substantially equal to said reference voltage, said control logic including a comparator having a pair of inputs and an output, said reference voltage source being coupled to one of the inputs of the comparator, the other input of the comparator being coupled to the output of the integrator, the comparator having a hysteresis characteristic defining a band width for the ramp voltage at the maximum ramp voltage value, and means coupling the output of the comparator to the switch network, said switch network including a first switch and a second switch, said control logic further including first bias means coupled with the first switch for opening the latter when the output voltage of the comparator has a first value and for closing the first switch when the output voltage of the comparator has a second value, and second bias means coupled with the second switch for closing the same when the output voltage of the comparator has said first voltage value and for opening the second switch when the output voltage of the comparator has said second voltage value.

4,486,647

METHOD OF WELDING ALUMINUM TO TITANIUM AND A WELDED JOINT SO PRODUCED

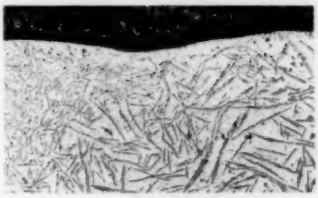
Osmo Kuusinen; Mikko Rantanen; Olavi Rintanen; Reijo Pajunen; Pekka Oittinen, and Kalevi Valtanen, all of Äetsä, Finland, assignors to Finnish Chemicals Oy, Aetsa, Finland

Filed May 3, 1982, Ser. No. 374,283

Claims priority, application Finland, May 7, 1981, 811401

Int. Cl.³ B23K 9/23

U.S. Cl. 219—137 WM 10 Claims



1. A method of welding aluminum to titanium comprising bringing a piece of aluminum adjacent to a piece of titanium to form a joint boundary between the two pieces, melting an aluminum or aluminum alloy filler such that it adheres to both pieces at the joint boundary, using enough welding energy that the titanium and the aluminum melt at the joint boundary, but using only enough welding energy that the temperature on the titanium side of the joint boundary is at maximum about 2000° C.

4,486,648

ENERGY REGULATOR FOR A HOUSEHOLD HEATING APPLIANCE FOR PRODUCING VARIABLE SPEED INITIAL HEATING

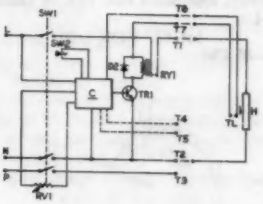
Alfie L. Grasso, Bewdley, England, assignor to Micropore International Limited, Droitwich, England

Filed Aug. 5, 1982, Ser. No. 405,357

Claims priority, application United Kingdom, Aug. 6, 1981, 8124088

Int. Cl.³ H05B 1/02

U.S. Cl. 219—501 13 Claims



1. A household heating appliance comprising:

a heating element; and

an energy regulator which comprises:

control means for cyclical control of a supply of electrical energy to the heating element,

switch means associated with the control means such that when the switch means is actuated the electrical energy supplied to the heating element is increased to a predetermined level and for a predetermined time,

means included in the control means to cause said predetermined energy level to vary in accordance with the setting of said heating appliance chosen by the user, and

means included in the control means for varying the prede-

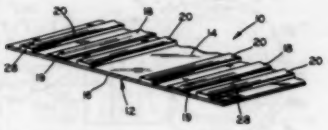
termined time in an inversely proportional manner to the variable energy level such that the duration of the predetermined time decreases automatically as the variable energy level increases.

4,486,649

CONTACT HEATER MOUNTING ASSEMBLY

Wendell C. Lane, Jr., Laurinburg, N.C., assignor to Dana Corporation, Toledo, Ohio

Filed Apr. 25, 1983, Ser. No. 488,451
Int. Cl.³ H05B 3/06
U.S. Cl. 219—536 **7 Claims**



1. An elongate contact heater assembly capable of being rolled into a coiled form, including:

(a) a flexible support sheet defining opposed top and bottom surfaces, said top surface containing a first adhesive;

(b) a heating element comprising top and bottom surfaces, said bottom surface of said element adhesively mated to said top surface of said sheet, said top surface of said element containing a second adhesive having a greater cohesive capacity than said first adhesive; and

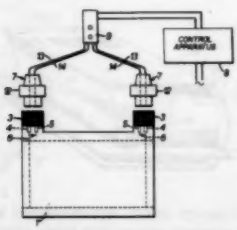
(c) a pair of spacers positioned between said top and bottom surfaces of said sheet, said spacers secured to said sheet, said heating element positioned laterally interjacent said spacers, said spacers defining a gap between said bottom surface of said sheet and said second adhesive, wherein said bottom surface of said sheet comprises cover means for protection of said second adhesive when said assembly is in coiled form.

4,486,650

ELECTRO-FUSION FITTING AND CONTROL APPARATUS THEREFOR

Eric Bridgstock, Derbyshire; David M. A. Kenworthy; Brian Glaves, both of South Yorkshire, and David A. Bilton, Derbyshire, all of England, assignors to Fusion Plastics Ltd., Chesterfield and Vectstar Limited, Sheffield, both of, England

Filed Sep. 27, 1982, Ser. No. 424,905
Claims priority, application United Kingdom, Sep. 30, 1981, 8129529
Int. Cl.³ H05B 3/58
U.S. Cl. 219—544 **12 Claims**



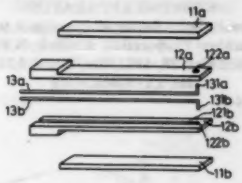
1. An electro-fusion fitting adapted for use with electrical control means to control the electrical power supplied to the fitting for welded attachment to a member of thermoplastic material, comprising: a body of thermoplastic material having a surface for engagement with said member, an electrical heating element disposed in and adjacent to said surface of the body, terminals electrically connected to the heating element for supplying an electric current to said heating element to fuse the material of the body to said member to be welded to the fitting, a device supported by said body and having a predetermined fixed characteristic electrical parameter, said device generating an electrical signal representative of said predetermined fixed characteristic electrical parameter selected in accordance with the electric power to be supplied to said heating element of the fitting, and electrical contact means supported by the body for electrical connection to said electrical control means and said device being electrically connected to said contact means and said contact means including at least one auxiliary terminal contact additional to said terminals.

4,486,651

CERAMIC HEATER

Kinya Atsumi, Toyohashi, and Noruei Ito, Aichi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jan. 24, 1983, Ser. No. 460,651
Claims priority, application Japan, Jan. 27, 1982, 57-11239; Mar. 3, 1982, 57-34163; Jul. 5, 1982, 57-117434
Int. Cl.³ H05B 3/10
U.S. Cl. 219—553 **5 Claims**



1. A ceramic heater comprising:

a supporting member made of an insulating ceramic;

a heater element made of an electrically conductive ceramic which is supported by said supporting member, said heater element comprising a pair of elements which are separately disposed on the outer surface of said supporting member; and

an electric current supply means for supplying an electric current to said heater element, said electric current supplying means comprising a pair of metallic wire elements which are embedded within said supporting member, and one end of each said metallic wire elements is connected to each of said heater elements while the other end thereof is connected to a battery outside supporting member;

said heater element being made of a non-oxidized sintered body of a mixture including 90 to 30 mol % of $MoSi_2$ and 10 to 70 mol % of Si_3N_4.

4,486,652

BLACKBODY RADIATION SOURCE WITH CONSTANT PLANAR ENERGY FLUX

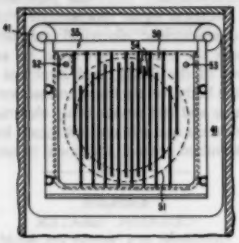
Richard S. Muka, Topsfield, and Carl J. Russo, Ipswitch, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Division of Ser. No. 262,838, May 12, 1981, Pat. No. 4,417,347. This application May 10, 1983, Ser. No. 481,205
Int. Cl.³ H05B 3/10
U.S. Cl. 219—553 **2 Claims**

1. A device for heat treatment of a semiconductor wafer comprising:

a blackbody radiation source made from a sheet of electrically resistive material configured in a generally planar, serpentine pattern and adapted for parallel, closely spaced alignment with said wafer, said source including means for conserving energy by establishing a prescribed radiation intensity over a region not substantially larger than said wafer and for providing substantially uniform blackbody radiation intensity within said region over the surface of

said wafer, said means including a thinned central portion of said resistive sheet which produces higher radiation intensity than the peripheral portion; and



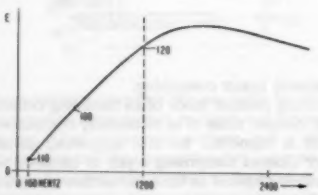
electrical means for connecting said blackbody radiation source to a source of electrical energy.

4,486,653

ADAPTIVE RATE CARD DATA REPRODUCING AND STORING APPARATUS

Kenneth E. Powell, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,761
Int. Cl.³ G06K *7/08*
U.S. Cl. 235—449 **8 Claims**



1. An adaptive rate sensor based magnetic stripe card data storing and translating terminal, comprising

an electromagnetic transducer and magnetic card transport arranged for sensing data recorded on said card, with the amplitude of the data signals from the transducer varying the proportion to the relative velocity of said transducer and said transport,

circuitry for generating, in response to said data signals, a timing pulse train of repetition rate proportional to said amplitude of said signal,

a source of pulses of substantially fixed repetition rate,

storing circuitry having a data input terminal coupled to said transducer and a control signal terminal for stepping the storing circuitry bit-by-bit, and

circuitry for selectively connecting said generating circuitry to said control signal terminal for storing said data signals as sensed and connecting said source of substantially fixed rate pulses to said control signal terminal for translating the stored data from said storing circuitry.

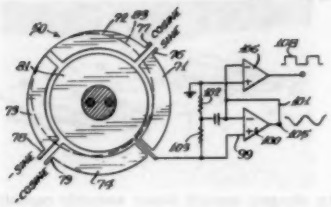
4,486,654

OPTICAL PATTERN TRACING SYSTEM WITH IMPROVED MANUAL CONTROL

Frans Brouwer, Glencoe, Ill., assignor to ESAB, North America, Inc., Fort Collins, Colo.

Filed Sep. 15, 1981, Ser. No. 302,653
Int. Cl.³ G05B *1/00*; H01G *5/06*
U.S. Cl. 250—202 **11 Claims**

1. An optical pattern tracing system of the type having a tracing head with a scanner that projects a photocell on the pattern and provides signals to a control circuit that in response thereto derives control signals for coordinate servomechanisms that position the tracing head over the pattern, including means for generating manual control signals for the control circuiut to drive the tracing head in approach toward the pattern, characterized by a printed circuit board carrying at least a part of the control circuit and the means for generating manual control signals, means for generating out of phase reference signals for the control circuit, said means for generating manual control signals including a variable capacitor having a plurality of coplanar input conductive metal foil electrodes on the printed circuit board each connected to receive one of the signals from the means for generating reference signals, a conductive metal foil output electrode on the printed circuit board coplanar with the input foil electrodes, and an adjustable conductive metal coupler disc mounted adjacent and over the input and output foil electrodes electrically coupled to the output electrode and capacitively coupled to the input electrodes to develop a continuously varying signal in the output electrode having a phase corresponding to the adjusted position of the coupler disc.

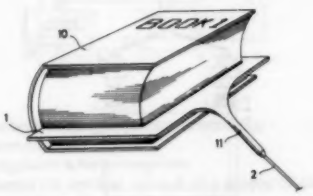


4,486,655

CHARACTER AND PICTURE READING DEVICE

Hiroyuki Kataoka, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1982, Ser. No. 365,850
Claims priority, application Japan, Apr. 7, 1981, 56/51224
Int. Cl.³ G03B *27/32*
U.S. Cl. 250—211 R **6 Claims**



1. A character and picture reading device for use with an apparatus for converting optical data into electrical signals, comprising; a planar light source arranged in one or more sections, and a planar photo-conductive layer provided on each of two opposed surfaces of each said planar light source section, so that data on two pages of a document or documents may be simultaneously read.

4,486,656

PULSED LIGHT BARRIER APPARATUS FOR DIRECT CONNECTION TO AN A.C. SUPPLY

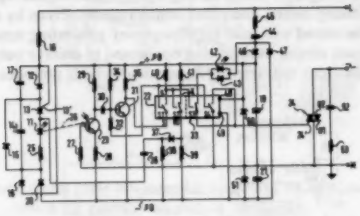
Jürgen Erdmann, and Fritz Kuhn, both of Waldkirch, Fed. Rep. of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Fed. Rep. of Germany

Filed Mar. 19, 1982, Ser. No. 360,018

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1981, 3113547

Int. Cl.³ H01J 40/14

U.S. Cl. 250—214 R 7 Claims



1. Pulsed light barrier apparatus for direct connection to an a.c. supply, said apparatus comprising a photoreceiver, a photodiode transmitter connectable to the a.c. supply via a rectifier diode and a PUT, and a storage capacitor connected in parallel with the PUT and the photodiode transmitter, said storage capacitor being discharged in rhythm with the a.c. supply voltage via the photodiode, the apparatus being characterised in that a Zener diode is connected in parallel to the storage capacitor, in that the gate terminal of the PUT is connected to the terminal of the rectifier diode which is connected to the a.c. supply voltage, in that the a.c. supply voltage is supplied via a resistor, and in that a capacitor is connected in parallel with the rectifier diode, with the circuit formed by the capacitor and the resistor having a time constant such that a voltage which just beings to fall below the constant voltage value of the Zener diode is present at the control electrode during the zero passage of the a.c. supply voltage.

4,486,657

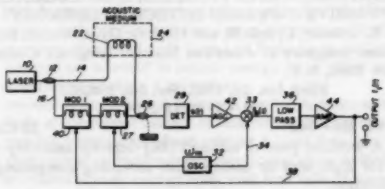
PHASE-LOCK FIBER OPTIC INTERFEROMETER

Ira J. Bush, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 27, 1982, Ser. No. 382,850

Int. Cl.³ G02B 5/14

U.S. Cl. 250—227 8 Claims



1. An optical interferometric sensor system for accurately measuring acoustic phase shift in the presence of noise comprising:

an optical interferometer including

a light source;

a sensor light propagating leg with means therein for optically phase modulating light propagating therethrough in accordance with an acoustic pressure field;

a reference light propagating leg;

a first phase modulator disposed in one of said light propagating legs;

a second phase modulator disposed in one of said light propagating legs;

means for splitting light from said light source and coupling the split light beams to propagate through said sensor and reference legs; and

means for recombining the beams after propagation through said sensor and reference legs;

a detector for generating an electrical signal proportional to the recombined beam from said recombining means;

an oscillator for generating a voltage signal at a carrier frequency ω_m and applying said signal to control said second phase modulator;

means for mixing said carrier frequency signal ω_m with the output signal from said detector;

a low pass filter for filtering the output signal terms from said mixing means; and

means for feeding back the filtered output from said low pass filter to control said first phase modulator.

4,486,658

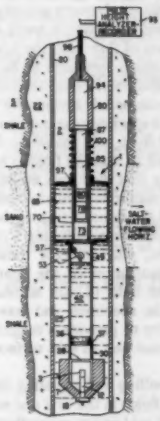
WATER FLOW WELL LOGGING SONDE AND METHOD OF WATER FLOW SENSING

Hubert D. Scott, Katy, and Campsey, Alief, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 30, 1982, Ser. No. 403,884

Int. Cl.³ G01V 5/10

U.S. Cl. 250—268 10 Claims



1. A radioactivity well logging sonde for sensing fluid flow in an earth formation from a borehole traversing said formation wherein said borehole contains salt water, comprising:

means for irradiating said earthen formation with neutrons,

detector means for detecting gamma rays from said earthen formation,

means adapted to be connected to a well logging cable for processing pulses from said detecting means and providing them uphole by way of the well logging cable,

means spatially arranged with the gamma ray detecting means for displacing the salt water in the borehole in the vicinity of the detector means so that substantially there is no salt water between the side of the borehole and the detector means, and

second means spatially arranged with the irradiating means for displacing a substantial amount of borehole salt water in the vicinity of the irradiating means so as to minimize the amount of borehole salt water irradiated with neutrons.

4,486,659

EMISSON-ELECTRON MICROSCOPE

David W. Turner, Oxford, England, assignor to Thor Cryogenics Limited, England

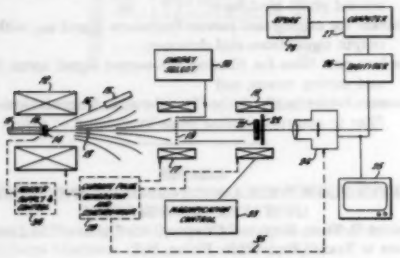
PCT No. PCT/GB82/00008, § 371 Date Sep. 13, 1982, § 102(e) Date Sep. 13, 1982, PCT Pub. No. WO82/02624, PCT Pub. Date Aug. 5, 1982

PCT Filed Jan. 15, 1982, Ser. No. 420,223

Claims priority, application United Kingdom, Jan. 16, 1981, 8101364

Int. Cl.³ G01N *23/22*; H01J *37/285*

U.S. Cl. 250—306 **4 Claims**



1. An emission-electron microscope comprising:

means for generating a magnetic field having a first region at which the field is relatively strong and a second region at which the field is relatively weak and which is interconnected by lines of flux with the first region,

means for locating a specimen to be examined in said first region, the specimen being selected or arranged in use such that electrons are emitted by at least a portion of a surface of said specimen extending in said first region at an angle to said field, said magnetic field generating means being arranged so that the field in said first region is sufficiently strong that electrons emitted by the specimen at angles to the magnetic field are constrained by the field to spiral around the lines of flux of the field,

electron detector means including a detector located in said second region, said detector means being arranged to provide an indication of the spatial distribution transversely of the field in said second region of electrons emitted by the specimen and travelling to said second region, thereby to provide a magnified emission-electron image of at least part of said surface portion of the specimen,

means for controlling and adjusting the relative strengths of the magnetic fields in the first and second regions to effect adjustment of said image magnification, and

resolution enhancement means for enhancing the resolution of said magnified image, including means in said first region, in front of said specimen locating means, for preventing continued passage towards said second region of emitted electrons with less than a predetermined kinetic energy along the flux lines.

4,486,660

ELECTRON BEAM TESTING DEVICE FOR STROBOSCOPIC MEASUREMENT OF HIGH-FREQUENCY, PERIODIC EVENTS

Hans-Peter Feuerbaum, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 284,828

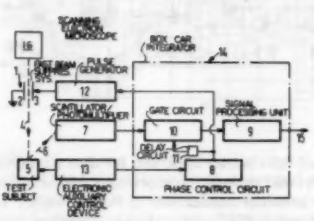
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036708

Int. Cl.³ H01J *37/28*

U.S. Cl. 250—310 **1 Claim**

1. A circuit for phase control and signal processing for use with an electron beam testing device for stroboscopic measurement of high-frequency periodic events at a measuring object resulting from driving the testing device with a high-frequency generating means, said testing device including a scanning electron beam microscope having a beam suppression or blanking system, detector means for detecting secondary electrons emitted from the measuring object when the measuring object is struck by an electron beam from the microscope, and pulse means for controlling the beam suppression system, comprising:

a boxcar integrator means having a gate circuit means, signal processing means, and phase control means driven by and synchronized with said high-frequency generating means, said gate circuit means being connected to receive output signals from the detector means and which provides an



individual gated output signal by use of a gate window at each output signal to said signal processing means whenever each of the output signals is received, the signal processing means then integrating the individual output signals, and said phase control means being connected for simultaneously synchronizing said pulse means and said gate circuit means with said high frequency generating means at a specific phase;

a delay means being provided between the phase control means and gate circuit means; and

said delay means delaying an output from the phase control means by a time interval related to a transit time of the electron beam of the electron microscope, whereby the modified boxcar integrator for phase control and signal processing causes automatic simultaneous synchronization between electron beam pulsing and signal processing.

4,486,661

WALL MOUNTABLE MODULAR SNAP-TOGETHER PASSIVE INFRARED DETECTOR ASSEMBLY

John K. Guscott, Lynnfield, and Hugh D. Dyer, Norton, both of Mass., assignors to American District Telegraph Company, New York, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,503

Int. Cl.³ G01J *5/04*

U.S. Cl. 250—342 **28 Claims**

1. A modular passive infrared (IR) detector assembly suitable for high wall or ceiling flush mounting comprising, in combination:

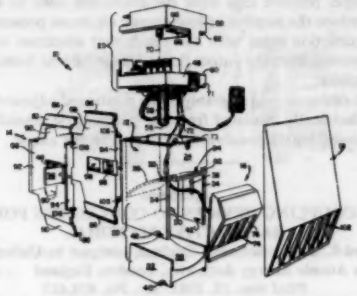
a passive infrared detector sub-assembly defining an optical cavity having a mouth;

a U-shaped resilient housing sub-assembly for holding said passive infrared detector sub-assembly defining said optical cavity having said mouth and for flushly mounting said passive infrared detector sub-assembly to a wall;

an infrared window sub-assembly adapted to be removably snapped onto the mouth of said optical cavity of said passive infrared detector sub-assembly for forming an optical enclosure; and

a cover plate sub-assembly adapted to be removably snapped

onto said U-shaped resilient housing sub-assembly over said infrared window sub-assembly;



said cover plate sub-assembly including an aperture through which IR energy can pass to said cavity.

4,486,662

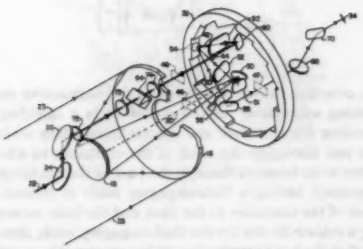
SWITCH-WHILE-SCAN OPTICAL SYSTEM

Irving R. Abel, Lexington, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 27, 1982, Ser. No. 453,646

Int. Cl.³ H01J *31/49*

U.S. Cl. 250—334 **10 Claims**



1. Apparatus for scanning radiant energy from a scene of interest which alternately examines at least two fields of view within said scene of interest, said apparatus comprising:

A. scanning drum mirror means rotatable about a first axis, said drum mirror means including a plurality of reflecting mirror surfaces wherein the angles between each of said mirror surfaces and radii from said first axis to said mirror surfaces are selected to couple energy from either of said fields of view along a second axis;

B. an optical pupil, which is an area located in space substantially at the mirror surface of said drum mirror means at a position substantially fixed relative to said first axis;

C. first optical collection means positioned along a third axis to collect radiant energy from said first field of view and to direct said collected energy toward said pupil located at said mirror surface of said scanning drum mirror means;

D. a second optical collection means positioned along a fourth axis to collect radiant energy from said second field of view and to direct said collected energy toward said pupil at said mirror surface of said drum mirror means; and

E. detection means coupled to receive radiation collected by either said first or said second optical collection means which has reflected off said mirror surface located at said optical pupil in a direction substantially along said second axis.

4,486,663

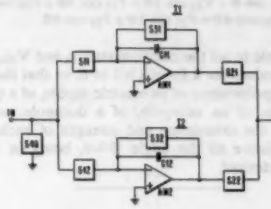
DUAL INTEGRATOR FOR A RADIATION DETECTOR

Roger E. Arseneau, Arlington Heights, Ill., assignor to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed May 10, 1982, Ser. No. 376,093

Int. Cl.³ G01T *1/163, 1/202*

U.S. Cl. 250—363 S **4 Claims**



1. In a scintillation camera having a plurality of photodetectors arranged to view overlapping areas of a crystal and detection circuitry for calculating the position on the crystal of a scintillation event based on the receipt of signals from the photodetectors in response to radiation impinging on the crystal, the detection circuitry including a first integrator for integrating the electrical signals corresponding to an event, the improvement comprising a second integrator connected in parallel to the first integrator and switching means for controlling the operation of the first and second integrators so that alternatingly with each incoming event one of the integrators is integrating signals corresponding to an event, while the other integrator is transferring the result of integrating signals corresponding to another event and is being reset.

4,486,664

ARRANGEMENT AND PROCESS FOR ADJUSTING IMAGING SYSTEMS

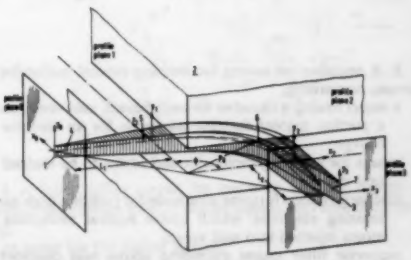
Hermann Wollnik, Auf der Platte 30, D-6301 Fernwald 2, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 401,614

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 130276

Int. Cl.³ B01D *59/44;* **H01J** *35/00*

U.S. Cl. 250—396 R **24 Claims**



1. Arrangement for adjusting an imaging system for bundles of charged particles, or for adjusting a spectrometer for bundles of charged particles, by means of one or more electrostatic correcting elements, characterised in that each of these correcting elements possesses a large number (N) of electrodes, which are arranged, symmetrically or asymmetrically, around the optical axis (Z) of the particle bundle, and are at potentials such that the resulting potential (V(r,Φ)) at an azimuth angle (Φ) relative to a cylindrical surface at a specified radius (r) around a straight optical axis (Z) or, as the case may be, rela-

tive to a corresponding toroidal surface around a curved axis, can be represented as the sum of

$$V_1 = V_{11} \sin \Phi + V_{12} \sin 2\Phi + V_{13} \sin 3\Phi + V_{14} \sin 4\Phi + V_{15} \sin 5\Phi + V_{16} \sin 6\Phi$$

and

$$V_2 = V_{21} \cos \Phi + V_{22} \cos 2\Phi + V_{23} \cos 3\Phi + V_{24} \cos \Phi + V_{24} \cos 4\Phi + V_{25} \cos 5\Phi + V_{26} \cos 6\Phi$$

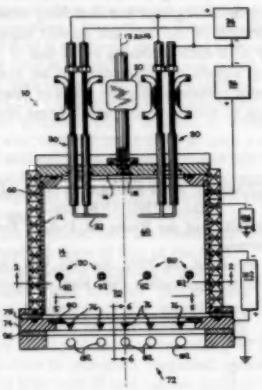
it being possible to set the coefficients V_{1k} and V_{2k}, as desired, by selecting values for k from k=1 to 6, so that the potentials represent a superposition of an electric dipole, of a quadrupole, of a hexapole, of an octapole, of a decapole, and/or of a duodecapole, the orientation and strength of each individual multipole, relative to the angle $\Phi=0$, being in every case adjustable as desired.

4,486,665

NEGATIVE ION SOURCE

Ka-Ngo Leung, Hercules, and Kenneth W. Ehlers, Alamo, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 6, 1982, Ser. No. 405,963
Int. Cl.³ H01J *27/00*
U.S. Cl. 250—427 **16 Claims**



1. A negative ion source for ionizing neutral molecules and atoms, comprising;

a vessel having a chamber formed therein, said vessel having a portion thereof forming an anode for an electron discharge;

means for injecting molecules and atoms to be ionized into said vessel;

discharge means forming a cathode for emitting high-energy ionizing electrons which ionize neutral molecules and atoms injected into said vessel;

magnetic filter means extending across said chamber for reflecting high-energy electrons while allowing ions to pass therethrough, said magnetic filter means dividing the chamber into an ionizing zone containing ionized particles formed by the discharge means and electrons and into an extraction zone containing ions and relatively few high-energy electrons;

extractor means coupled to the extraction zone and positively biased to provide an electric field for extracting negative ions from the chamber, said extractor means including a plasma grid assembly and an extractor grid assembly;

said plasma grid assembly being positioned adjacent to the extraction zone, electrically insulated from said anode, and biased slightly positive with respect to the anode to increase the plasma potential in the extraction zone and repel positive ions from the extraction zone to thereby reduce the number of low-energy electrons present in the extraction zone with the result that electrons are suppressed from the output flow of negative ions from the ion source;

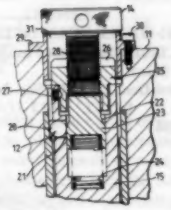
said extractor grid assembly being positioned adjacent to and electrically insulated from the plasma grid assembly and biased highly positive with respect to the anode.

4,486,666

COUPLING DEVICES TO CONTAINERS FOR RADIOACTIVE MATERIAL

Edward L. Jones, Seascale, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Sep. 15, 1982, Ser. No. 418,411
Claims priority, application United Kingdom, Oct. 2, 1981, 8129845
Int. Cl.³ G21F *5/02*
U.S. Cl. 250—497.1 **4 Claims**



1. A coupling device to containers for radioactive material comprising a hoistable necked container in a shielding flask surrounding the container and a hoist termination which can engage and disengage the neck of the container to allow the container to be lowered through the base of the shielding flask, the container having a flask-engaging latch to provide axial restraint of the container in the flask and the hoist termination having a release device for the flask-engaging latch; characterised in that the hoist termination **40** has an operable member **43** which can be single-handed located manually either in an upper or lower position and, when in the upper position it permits engagement of the hoist termination **40** with the container **10** but prohibits operation of the release device **51** for the flask engaging latch **12** until said operable member **43** is lowered and when so lowered then permits operation of the release device but prevents disengagement of the hoist termination **40** until a reverse procedure is followed.

4,486,667

DRIVE SYSTEM FOR AN ELECTRIC GENERATOR

Ladislaw G. Srogi, 338 Apple St., Syracuse, N.Y. 13204

Filed Oct. 26, 1981, Ser. No. 314,534
Int. Cl.³ F16H *33/20*
U.S. Cl. 290—1 R **7 Claims**

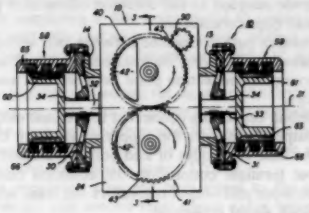
1. A method of generating electrical energy that includes the steps of

connecting the armature of an electric generator to a shuttle,

movably mounting the shuttle for reciprocation along a linear path of travel within a stationary frame,

securing a mechanical oscillator having unbalanced rotors to the shuttle so that alternating opposed forces developed by the rotors act upon the shuttle in the direction of said linear path of travel whereby the shuttle reciprocates along said linear path of travel, and

driving the rotors of the oscillator from a prime mover mounted outside of the shuttle whereby the prime mover



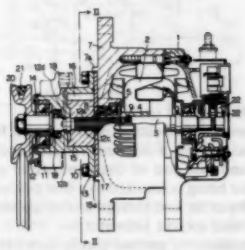
is isolated from the load demands placed upon the generator.

4,486,668

ALTERNATOR WITH VACUUM PUMP

Taro Asahi, Chiryu; Toshimitu Higashino, Oubu; Noboru Ikoma, Okazaki; Masato Hanai, Atsumi, and Nakato Murata, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 19, 1983, Ser. No. 515,271
Claims priority, application Japan, Sep. 3, 1982, 57-153430
Int. Cl.[3] F01N *3/30*; H02K *9/06*
U.S. Cl. 290—1 B **3 Claims**



1. An alternator with a vacuum pump comprising:
an alternator housing;
a rotor rotatably disposed in said alternator housing;
an alternator shaft supporting said rotor and rotatably supported at its one end by a bearing;
tubular bushing shaft firmly coupled at its one end to the other end of said alternator shaft and rotatably supported by a bearing;
a pump housing attached to said alternator housing;
a pump shaft rotatably supported by said pump housing and detachably coupled at its one end to the other end of said tubular bushing shaft through coupling means;
a pump rotor supported on said pump shaft and rotatably disposed in said pump housing; and
a driven pulley fixed to the other end of said pump shaft.

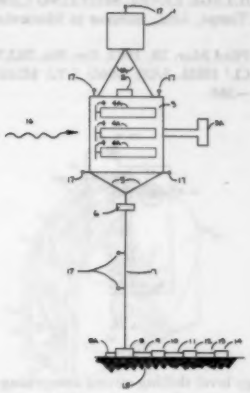
4,486,669

WIND GENERATOR KITE SYSTEM

Paul F. Pugh, 4082 Sequoyah Rd., Oakland, Calif. 94605

Filed Nov. 9, 1981, Ser. No. 319,112
Int. Cl.[3] B64B *1/50*; F03D *9/00*
U.S. Cl. 290—44 **16 Claims**

1. A system for generating electric energy from wind power comprising the following:
electric generators mounted in an airplane-type kite structure;
said generators driven by airplane propellers;
said kite structure suspended in air by wind speed and by a hot air balloon;
said kite structure anchored to the earth by a high strength cable;



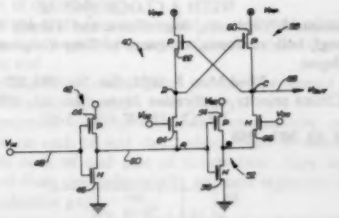
means to raise and lower said structure to a position of maximum wind speed; said means comprising a second propeller; said second propeller being engine driven;
said generators connected through electric cables to existing electrical utility grid.

4,486,670

MONOLITHIC CMOS LOW POWER DIGITAL LEVEL SHIFTER

Yiu-Fai Chan, Saratoga, Calif., and Allen L. Evans, Colorado Springs, Colo., assignors to Intersil, Inc., Cupertino, Calif.

Filed Jan. 19, 1982, Ser. No. 340,765
Int. Cl.[3] H03K *17/60*, *17/04*
U.S. Cl. 307—264 **8 Claims**



1. A level shifter circuit for use with a power supply for shifting the voltage level of digital signals, said shifter comprising:
an input for the digital signals;
an output for shifted digital signals;
first and second series-coupled complementary transistors with each transistor having an input coupled to the signal input and an output coupled to the signal output, the first transistor being coupled to the power supply with the first transistor output providing digital signals of a particular voltage level in accordance with the voltage level supplied by the power supply to the first transistor;
latch means for latching the first transistor off when the second transistor is on to reduce the direct current dissipation of power through the transistors; and
isolation means for coupling the second transistor output to

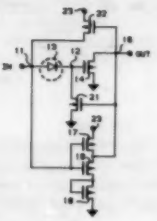
the signal output when the second transistor is on and for preventing the second transistor from breaking down while the first transistor is on.

4,486,671

VOLTAGE LEVEL SHIFTING CIRCUIT

Daniel Ong, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 29, 1982, Ser. No. 362,711
Int. Cl.³ H03L *5/00*; G06G *7/12*; H03K *17/60*
U.S. Cl. 307—264 **6 Claims**



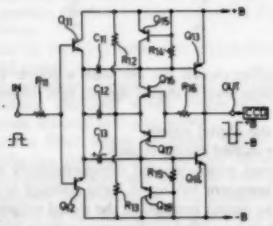
1. A voltage level shifting circuit comprising: an input node and an output node; a first transistor for controllably clamping the output node to a first voltage level and having a control electrode coupled to the input node; a second transistor for controllably clamping the output node to a second voltage level and having a control electrode coupled to the input node; a third transistor for controllably providing the second voltage level to the input node and having a control electrode coupled to the output node; a fourth transistor in parallel with the first transistor for assisting the first transistor to clamp the output node to the first voltage level and having a control electrode coupled to the input node; and a fifth transistor for controllably holding the control electrode of the first transistor to the first voltage level and having a control electrode coupled to the output node.

4,486,672

DRIVE CIRCUITS FOR DRIVING DIGITAL CIRCUITS WITH A CLOCK SIGNAL

Toshimichi Nishimura, Sagamihara, and Takashi Noguchi, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 5, 1982, Ser. No. 355,237
Claims priority, application Japan, Mar. 11, 1981, 56-33859
Int. Cl.³ H03K *5/12, 5/02*
U.S. Cl. 307—268 **5 Claims**



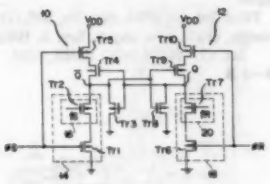
1. A drive circuit comprising:
a pair of output transistors of opposite conductivity type having their emitter and collector terminals connected in series between two voltage source terminals, each of said output transistors having a base electrode;
a pair of auxiliary transistors of opposite conductivity type having their emitter and collector terminals connected in series between the base electrodes of said output transistors, each of said auxillary transistors having a base electrode coupled to the common connection point between said ouput transistors;
a resistive path connected between said voltage source terminals and having an intermediate point coupled to the common connection point between said auxillary transistors;
coupling capacitors connected to the base electrodes of said output transistors for supplying an input clock signal to the base electrodes of said output transistors; and an output terminal coupled to the common connection point between said output transistors and from which an output clock signal is derived.

4,486,673

FLIP-FLOP CIRCUIT

Hideharu Koike, Chigasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 10, 1982, Ser. No. 356,768
Claims priority, application Japan, Mar. 27, 1981, 56-45051
Int. Cl.³ H03K *3/356*
U.S. Cl. 307—279 **4 Claims**



1. A flip-flop circuit comprising:
first and second transistors each being of first conductivity type and having a conductive path and a control electrode, and one end of the conductive path of said first transistor being connected to a first power supply terminal while the other end thereof to one end of the conductive path of said second transistor;
a third transistor of second conductivity type arranged between the other end of the conductive path of said second transistor and a second power supply terminal, the control electrode of said third transistor being connected to that of said second transistor;
a first circuit arranged between the other end of the conductive path of said second transistor and the second power supply terminal and comprising a first logical circuit and a fourth transistor of second conductivity type connected in series with each other, said first logical circuit including one or more transistor(s) of second conductivity type;
fifth and sixth transistors each being of first conductivity type and having a conductive path and a control electrode, and one end of the conductive path of said fifth transistor being connected to the first power supply terminal while the other end thereof to one end of the conductive path of said sixth transistor;
a seventh transistor of second conductivity type arranged between the other end of the conductive path of said sixth transistor and the second power supply terminal, the control electrode of said seventh transistor being connected to that of said sixth transistor while to the node between the second transistor and the first circuit;
a second circuit arranged between the other end of the conductive path of said sixth transistor and the second power supply terminal and comprising a second logical circuit and an eighth transistor of second conductivity type connected in series with each other, said second logical circuit including one or more transistor(s) of second conductivity type, and the node between the sixth

transistor and the second circuit being connected to the control electrode of said second transistor;

a means for supplying a first set signal to control electrodes of said first and fourth transistors;

a means for supplying a first reset signal to control electrodes of said fifth and eighth transistors, neither of said first set and reset signals becoming logic "1" simultaneously;

a means for supplying a second set signal to the first logical circuit, said second set signal either being kept unchanged during the time period when said first set signal is logic "1" or becoming logic "1" only during the time period when said first set signal is logic "1"; and

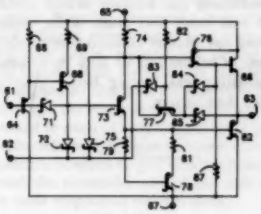
a means for supplying a second reset signal to the second logical circuit, said second reset signal either being kept unchanged during the time period when said first reset signal is logic "1" or becoming logic "1" only during the time period when said first reset signal is logic "1".

4,486,674

THREE STATE GATE HAVING ENHANCED TRANSITION TO AN ACTIVE LOW

Eric D. Neely, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 5, 1983, Ser. No. 510,852
Int. Cl.³ H03K *19/088, 19/013*
U.S. Cl. 307—473 **2 Claims**



2. A three state gate having an input terminal, an output enable terminal, a first and a second supply voltage terminal, and an output terminal for providing an output having an active high, an active low, and a high impedance state, said three state gate comprising:

input means coupled to said input terminal for receiving an input signal;

phase splitting means for generating an in-phase signal and an out of phase signal comprising a first transistor having a collector coupled to said first supply voltage terminal and a base coupled to said input terminal;

output means for providing said output signal comprising a second and third transistor, said second transistor having a collector coupled to said first supply voltage terminal, an emitter coupled to said output terminal, and a base coupled to said collector of said first transistor for receiving said out of phase signal, said third transistor having a collector coupled to said output terminal, an emitter coupled to said second supply voltage terminal, and a base coupled to an emitter of said first transistor for receiving said in-phase signal;

enabling means coupled between said output enable terminal and said output means for selectively disabling said output means; and

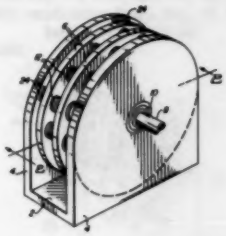
feedback means for selectively enhancing the transition of the output signal from an active high to an active low comprising a fourth transistor having a base coupled to said first supply voltage terminal by a resistor, a collector coupled to said output terminal by a first diode and coupled to a base of said second transistor by a second diode, and an emitter coupled to said collector of said first transistor.

4,486,675

DIRECT CURRENT MAGNETIC MOTOR

Kenneth J. Albert, Canyon Country, Calif., assignor to Walter C. Bagnell, Los Angeles, Calif.

Filed Feb. 16, 1982, Ser. No. 348,755
Int. Cl.³ H02K *37/00*
U.S. Cl. 310—46 **7 Claims**



1. A direct current magnetic motor comprising:

(A) a pair of stator plates disposed parallel to and aligned with one another;

(B) a plurality of permanent magnets mounted on inside faces of each of said stator plates such that diametrically opposed permanent magnets on each stator plate are of the same polarity, circumferentially adjacent permanent magnets on each stator plate are of opposite polarity, and facing magnets are of opposite polarity;

(C) a rotor assembly including:

1. a pair of rotor plates;
2. a central shaft fixedly coupled to said pair of rotor plates and mounted for rotation in said pair of stator plates; and
3. a plurality of electromagnets mounted proximate the periphery of said pair of rotor plates;

(D) a concentric pair of segmented commutator rings mounted on each of said stator plates, each of said segments in each of said pair of commutator rings being separated from circumferentially adjacent segments by a non-conductive gap;

(E) at least one pair of electrically conductive brush means carried by said rotor plates, each brush means of said pair slideably engaging one of said segmented commutator rings;

(F) said brush means being coupled to said plurality of electromagnets for:

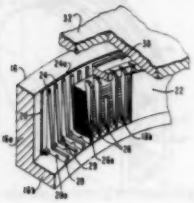
1. first, energizing at least one of said plurality of electromagnets to be attracted to one facing pair of said plurality of permanent magnets;
2. second, collapsing the magnetic field of said at least one of said plurality of electromagnets as it rotates by said one facing pair of magnets and as said brush means impinges non-conductive gaps in said commutator rings; and
3. third, energizing said at least one of said plurality of electromagnets to be repulsed from said one facing pair of said plurality of permanent magnets.

4,486,676

SUPERCONDUCTING ROTOR WITH END TURN REGION INTERMITTENT SUPPORT AND COOLING ASSEMBLY

William G. Moore, Monroeville; Phillip W. Eckels, Penn Hills Township, Allegheny County, and Michael R. Jugan, Duquesne, all of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jan. 16, 1984, Ser. No. 571,260
Int. Cl.³ H02K *3/48, 9/197*
U.S. Cl. 310—52 3 Claims



1. A dynamoelectric machine rotor, comprising:

a superconducting field winding comprising a straight portion and an end turn portion, said straight portion being disposed in axial slots in a rotor body, said end turn portion extending axially from said slots;

said end turn portion comprising a plurality of coils, each of said coils comprising a plurality of conductor stacks, each of said stacks comprising a plurality of conductors;

an assembly for mechanically supporting, electrically insulating, and cooling said end turn portion including a plurality of end region support blocks, each of said support blocks having a generally L-shaped cross-section comprising an axial and a radial leg, one of said conductor stacks being disposed radially outward of said axially extending leg and in front of said radially extending leg of each of said support blocks;

a plurality of insulative spacers including a set of radially extending rear spacers between each of said plurality of conductor stacks and said radial leg of one of said support blocks, a set of radially extending front spacers between each of said plurality of conductive stacks and said radial leg of another one of said support blocks, and a set of bottom spacers between each of said plurality of conductive stacks and said axial leg of one of said support blocks, said spacers serving to support said conductive stack and to insulatively space it from said support blocks, said spacers of each of said sets being spaced from each other to allow coolant to flow over a major portion of the surface of each of said conductive stacks; and,

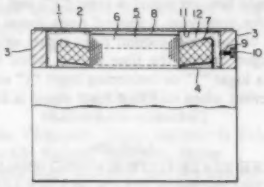
a top insulative spacer over each of said conductive stacks with means for compressively holding said top spacer against said conductive stack and said conductive stack against said bottom spacers and said axial leg of one of said support blocks, said top spacer having coolant flow passages on its axial inward and outward surfaces and on its radial inward surface.

4,486,677

ENCASED ELECTRIC MOTOR EMPLOYING GAS AS HEAT DISSIPATING MEANS

Sakuei Yamamoto; Hiroshi Inao; Kiyonori Tokumitsu; Mitsuhiro Nishida, all of Fukuoka; Takatoshi Ishikawa, Maebaru, and Shigekazu Sakabe, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 2, 1983, Ser. No. 490,414
Claims priority, application Japan, Apr. 30, 1982, 57-73759; Sep. 16, 1982, 57-162819
Int. Cl.³ H02K *9/08*
U.S. Cl. 310—64 5 Claims



1. An encased electric motor comprising:

an airtight cylindrical casing having inner and outer walls;

a stator rigidly mounted within said casing between said inner and outer walls; and

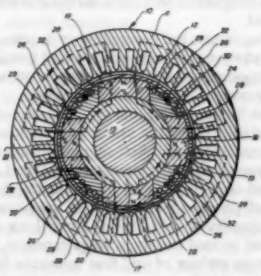
a heat conducting gas mixture sealed within said casing between said inner and outer walls, wherein said heat conducting gas mixture comprises approximately 60–90% by volume of helium and 40–10% by volume of an electrically insulating gas having better electrical insulating properties than helium.

4,486,678

ROTOR FOR A PERMANENT MAGNET GENERATOR

Raymond N. Olson, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 6, 1983, Ser. No. 529,473
Int. Cl.³ H02K *21/12*
U.S. Cl. 310—156 14 Claims



1. A rotor for a permanent magnet generator comprising:

a permanent magnet establishing a magnetic field in a path external to the rotor for coupling with stator windings to induce a voltage therein;

a carrier of nonmagnetic material on said rotor; and

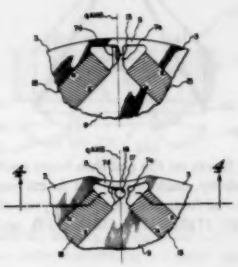
an element of magnetic material carried by said carrier, establishing a magnetic path parallel with said external path to reduce the magnetic field in the external path and reduce the voltage induced in said stator windings.

4,486,679

PERMANENT MAGNET ROTOR AND METHOD OF MAKING SAME

Donald W. Jones, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 28, 1983, Ser. No. 546,235
Int. Cl.³ H02K 1/28
U.S. Cl. 310—218 7 Claims



1. A rotor for a permanent magnet machine comprising:
a stack of disk laminations, each lamination having a plurality of pole piece sections connection to one another by inwardly deformed circumferential bridges situated at the disk periphery, an interior core portion, and a columnarly collapsed radial ligament connecting said core portion to each of said bridges, respectively, said core portion and each of said pole pieces, respectively, defining the radial thickness of magnet slots, respectively, said laminations in said stacks aligned so that said magnet slots define a passageway through the stack in the axial direction; and
a magnet situated in each of said magnet slots, respectively, said inwardly deformed bridges and said columnarly collapsed ligaments adapted to provide predetermined hoop stress around the circumference of the disk to hold said magnets in their respective magnet slots.

4,486,680

ULTRASONIC PIEZOELECTRIC DISINTEGRATER

Ludwig Bonnet, Knittlingen, and Ehrenfried Bitrolf, Bretten-Ruit, both of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Mar. 4, 1983, Ser. No. 472,010
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1982, 8205957[U]
Int. Cl.³ H01L 41/08; A61B 17/00
U.S. Cl. 310—323 8 Claims

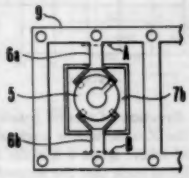
1. A biological stone disintegrator of the type having a wire basket projecting from the distal end of an insertion sheath with means to oscillate the basket, comprising: a metal fitting member having a bore therethrough with a multi-wire strand having a proximal end secured to the fitting member extending longitudinally of the bore and projecting beyond the distal end of the fitting, a plastic insertion sheath received around the strand beyond the distal end of the fitting having a bore therethrough in which the strand extends, the strand projectable beyond a distal end of the sheath and forming a basket-like loop structure beyond the distal end of the sheath, the strand formed of a plurality of individual wires twisted together, the wires being outwardly bowed to form the loop structure, the wires connected together by tubular coupling means at a proximal end and at a distal end of the loop structure, the strand wires being twisted about each other substantially from the proximal end of the loop structure to the proximal end of the fitting member and means including the fitting member for imparting an ultrasonic vibration directly to the strand to cause the wires of the loop structure to vibrate to impart crushing vibrations to the loop structure.

4,486,681

Y-SHAPED SUPPORT FOR PIEZOELECTRIC RESONATOR

Sumiyuki Ishigami, and Mitsuru Sato, both of Tokyo, Japan, assignors to Tokyo Denpa Kabushiki Kaisha and Kabushiki Kaisha Goto Seisakusko, both of Tokyo, Japan

Filed Sep. 13, 1982, Ser. No. 417,451
Claims priority, application Japan, Sep. 21, 1981, 56-150036
Int. Cl.³ H01L 41/08
U.S. Cl. 310—353 9 Claims



1. A quartz unit comprising:
a quartz vibrator;
a pair of opposed Y-shaped terminal metal fittings,
each including a stem part having a first end and a second end,
a pair of branch parts each protruding angularly from said first end of said stem and being angularly spaced relative to one another, and
a support part for said quartz vibrator located at the end of each said branch parts spaced from said stem part and said support parts protruding in a direction generally opposite to the direction of said stem part from the first end to the second end thereof, said support parts on each said terminal metal fitting confronting in spaced relation said support parts on the other said terminal metal fitting, and said support parts being bent relative to said branch parts and arranged to carry the quartz vibrator with said support parts located in a common plane;
said quartz vibrator having a pair of electrodes with each said electrode connected to a different one of said terminal metal fittings through one of said support parts thereon; and
a container comprising a front and a rear part enclosing and supporting said terminal metal fittings with said front and rear parts joined together and sealed in an airtight manner.

4,486,682

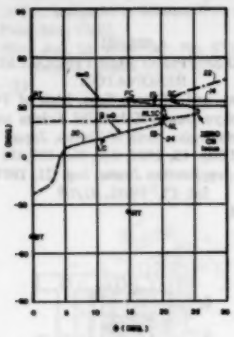
STRESS COMPENSATED QUARTZ RESONATOR HAVING ULTRA-LINEAR FREQUENCY-TEMPERATURE RESPONSE

Mitsuo Nakazawa, Matsushiro, Japan; Arthur Ballato, Long Branch, and Theodore J. Lukaszek, Ocean, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 17, 1983, Ser. No. 476,009
Int. Cl.³ H01L 41/08
U.S. Cl. 310—361 7 Claims

1. A piezoelectric resonator comprising a monolithic thin plate of piezoelectric material having a doubly rotated cut positioned at an orientation with respect to a standard rota-

tional symbol YXwl (ϕ,θ) defined in terms of the X, Y, Z crystallographic axes and the major faces at polar angles ϕ and θ, wherein thickness is in the Y direction, length in the X direction and width in the Z direction, and wherein ϕ is the direction of first rotation about the Z axis with respect to the X



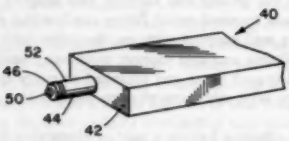
axis and θ is the direction of second rotation about the X axis with respect to the Z axis, where angle ϕ is in the range of $\phi=20°\pm2°$ C. and where angle θ is in the range of $\theta=20°\pm5°$ C. and are on a locus such that the second order temperature coefficient of frequency approximates zero and the coefficient of stress approximates zero.

4,486,683

PIEZOELECTRIC TRANSDUCER USING ELECTRICALLY POLED γ-PHASE NYLON 11

Brian A. Newman, Highland Park; Kook D. Pae, East Brunswick, and Jerry I. Scheinbeim, Somerset, all of N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 26, 1981, Ser. No. 315,327
Int. Cl.³ H01L *41/18*
U.S. Cl. 310—800 **5 Claims**



1. A piezoelectric transducer which comprises:
an electrically poled γ-phase nylon 11 sample;
a pair of electrodes electrically connected to said γ-phase nylon 11 sample.

4,486,684

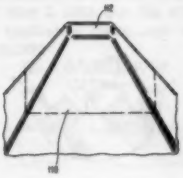
SINGLE CRYSTAL LANTHANUM HEXABORIDE ELECTRON BEAM EMITTER HAVING HIGH BRIGHTNESS

Fritz-Jürgen Hohn, Armonk, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 26, 1981, Ser. No. 267,319
Int. Cl.³ H01J *1/16, 19/10*
U.S. Cl. 313—336 **18 Claims**

1. Electron beam emission apparatus comprising a lanthanum hexaboride single crystal cathode for emitting an electron beam along a beam axis characterized in that the emitting surface of the lanthanum hexaboride cathode comprises at least two flat surfaces oblique to said beam axis and each of said two flat surfaces exposes a crystal plane selected from the group of crystal planes consisting of the (100), (110), (111), (321), (210), and (311) crystal planes.

18. A method for increasing the brightness of an electron beam emitted from a single crystal lanthanum hexaboride cathode comprising the step of:



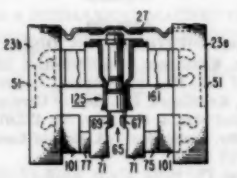
forming flat facets on the electron beam emitting portion of the cathode tip, each of said flat facets exposing a crystal plane selected from the group of crystal planes consisting of the (100), (110), (111), (321), (210), and (**311**) crystal planes.

4,486,685

ELECTRON GUN ASSEMBLY WITH BEAD STRAP HAVING AN ANGULATED GRASPING MEMBER

John R. Hale, Lancaster, and Robert J. Alexander, Quarryville, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed May 14, 1982, Ser. No. 378,240
Int. Cl.³ H01J *29/48*
U.S. Cl. 313—417 **5 Claims**



1. In an electron gun assembly having means for generating and directing at least one electron beam along a beam path, said generating and directing means being spaced along a plurality of insulating support means, said generating and directing means including attachment means to facilitate securing said generating and directing means to said insulating support means, the improvement wherein

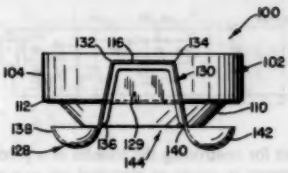
said attachment means includes a main body portion having a distal end and a proximal end, said proximal end having a pair of closely spaced apart grasping members, each of said grasping members having an inner leading edge with a first radius, r_1, and an outer edge with a second radius, r_2, wherein $r_1<r_2$, said inner leading edge forming an acute angle with respect to said outer edge, said edge radii and said acute angle providing means for reducing the viscous drag on said grasping members during embedment into said insulating support means, at least one member of said pair of grasping members forming an acute angle with respect to the other member of said pair of grasping members to increase the retention of said attachment means to said insulating support means.

4,486,686

GETTER ASSEMBLY WITH U-SHAPED SUPPORTS

Paolo della Porta, Milan, Italy, assignor to S.A.E.S. Getters S.p.A., Italy

Filed May 12, 1982, Ser. No. 377,462
Claims priority, application Italy, May 20, 1981, 21852 A/81
Int. Cl.³ H01J 29/94
U.S. Cl. 313—481 6 Claims



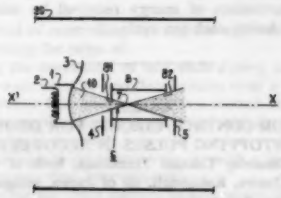
1. A getter assembly having an improved support for mounting in an electron tube comprising a holder having an outer wall and a bottom wall supporting an evaporable getter metal vapour releasing material, a tab, and a support means, adapted for contacting a wall of the electron tube integrally formed with said assembly support means comprising a metallic strip bent into a U shape, said strip having a length greater than its width, the bend taking place along at least one line perpendicular to the strip length, the strip terminating at each end with a rounded support foot.

4,486,687

ELECTRON GUN FOR CONVERGENT BEAM, AND A DEVICE, PARTICULARLY A VIDICON TUBE, EQUIPPED WITH SUCH A GUN

Bernard Epsztein, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 7, 1981, Ser. No. 261,466
Claims priority, application France, May 15, 1980, 80 10846
Int. Cl.³ H01J 29/46, 29/56
U.S. Cl. 315—14 2 Claims



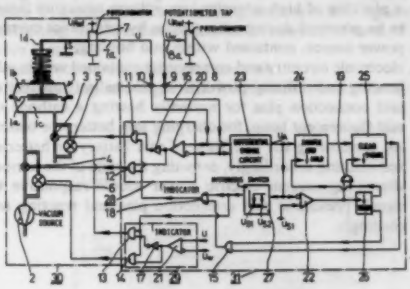
1. An electron gun for a convergent beam, comprising a cathode, first means for cooperating with said cathode, said first means having a fixed potential, in order to produce, within a vacuum space, an electron beam directed along an axis and to ensure convergence thereof in the first part of its travel towards a spot of minimum cross-section, second means constituted as a hollow cylinder encircling said spot and closed at both ends except for apertures respectively for entry and exit of said electron beam and having a potential constant in time and positive with respect to said cathode and thereby holding, in the vicinity of said spot, ions created by the impact of the electrons of said electron beam against residual gas molecules present in said vacuum space, and two additional electrodes, provided respectively on each side of said ion holding means and disposed in the immediate vicinity thereof, having positive potentials with respect to said ion holding means and thereby improving the effectiveness of said ion holding means.

4,486,688

METHOD AND ARRANGEMENT FOR REGULTING A PATH LENGTH IN DEPENDENCE UPON A VARIABLE CONTROL VALUE

Eckehard Schmitz, Mönchengladbach, Fed. Rep. of Germany, assignor to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed Feb. 17, 1982, Ser. No. 349,694
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106479
Int. Cl.³ B60Q 1/10
U.S. Cl. 315—83 12 Claims



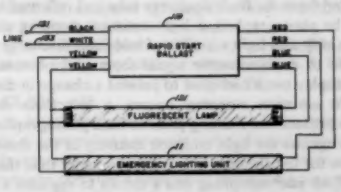
1. A method of controlling a regulating device by supplying a comparator with a path-length input signal from a pressure-responsive unit and with a variable input control signal, comprising the steps of: forming a comparator output signal from said input signals; determining the absolute signal difference between the two input signals; utilizing the absolute signal difference to produce a clear signal as long as this difference is greater than the higher of two predetermined threshold values and thereafter is still greater than the lower of said two threshold values; alternately applying pressure to said unit from two differential sources of pressure in dependence upon said output signal and if said clear signal is present at the same time; the absolute signal difference dropping below said lower threshold value, and then increasing to above the same; another clear signal being then produced only after elapse of a first time period corresponding to the decay time of the device and lasting for a second time period dependent upon the magnitude of the absolute signal difference.

4,486,689

EMERGENCY LIGHTING APPARATUS AND SYSTEMS

David W. Davis, Arlington, Tex., and George W. Plumly, 9900 Edmund Dr., Fort Worth, Tex. 76112, assignors to George W. Plumly, Fort Worth, Tex.

Filed Feb. 18, 1983, Ser. No. 467,775
Int. Cl.³ H05B 39/10; H02J 7/00
U.S. Cl. 315—92 98 Claims



1. An emergency lighting unit to be substituted for a conventional hot cathode type fluorescent lamp in a conventional fixture for receiving such fluorescent lamp and including a conventional rapid start ballast connected to supply cathode

heater voltage for such fluorescent lamp, said emergency lighting unit comprising:

a. an elongated housing of length substantially equal to that of a conventional said fluorescent lamp; with said housing having mounted at its ends connection pins comparable to the bi-pin base ends of such fluorescent lamp; with said housing having transverse dimensions providing sufficient clearance to permit substitution of said emergency lighting unit for a said fluorescent lamp in said conventional fixture;

b. a direct current power source comprising one or more rechargeable batteries contained within said housing;

c. a plurality of high intensity low voltage miniature lamps to be powered during emergencies by said direct current power source, contained within said housing;

d. electronic circuitry and components contained within said housing and utilizing power from said ballast supplied to said connection pins for normally heating a cathode of said fluorescent lamp, for charging said battery or batteries, monitoring the condition of said battery or batteries and reacting accordingly, detecting the state of the normal alternating current electric power source responsive to signals present at said connection pins and reacting accordingly.

4,486,690

TEST FLASH DEVICE FOR FLASH DISCHARGER

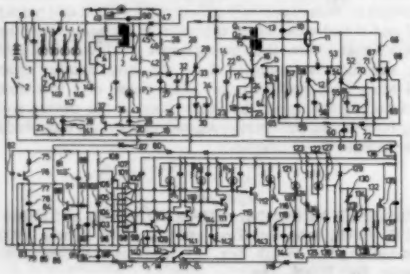
Yoshiyuki Takematsu, Tokyo, Japan, assignor to Fuji Koeki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 444,037, Nov. 23, 1982, abandoned. This application Feb. 14, 1984, Ser. No. 579,751

Claims priority, application Japan, Nov. 24, 1981, 56-186994

Int. Cl.³ H05B *41/32*

U.S. Cl. 315—151 **4 Claims**



1. A test flash device in a flash discharger including a flash discharge tube comprising a photometric circuit exposed to light emitted from the flash discharge tube and reflected by an object to be photographed, a light emission stopping circuit adapted to stop said light emission of said flash discharge tube in response to a photometric signal from said photometric circuit, a display circuit adapted to present a change in display when light emission stopping occurs, a test flash circuit adapted to provide test flashing prior to flash photographing, a circuit to regulate the light emission quantity of the flash discharge tube for test flashing to a quantity smaller than that for an actual flash photographing and a circuit to regulate a time integrated by an integrator included in said photometric circuit depending on said light emission quantity for test flashing so that generation of a signal representing a predetermined level of the integration value in said integrator occurs at an earlier point with respect to said actual flash photographing.

4,486,691

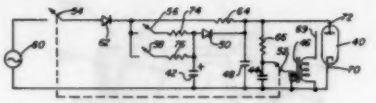
SEQUENTIAL CAPACITIVE DISCHARGE CIRCUIT FOR FLASH LAMPS

William C. Beggs, 4110 Shawnee La., NE., Atlanta, Ga. 30319

Continuation of Ser. No. 165,131, Jul. 2, 1980, abandoned. This application Aug. 6, 1982, Ser. No. 405,723

Int. Cl.³ H05B *37/00*

U.S. Cl. 315—241 P **10 Claims**



1. A circuit for controlling the transfer of a predetermined amount of energy to create an electrical arc across a pair of electrodes in a gaseous medium, comprising, in combination,

an energy storage circuit adapted to store all of the energy to be transferred into said arc during one cycle thereof, including a first capacitive means coupled directly across said electrode means and adapted to store electrical energy at a potential sufficiently high to condition said arc for striking thereof and a second capacitive means and rectifier means in series directly across said electrodes and adapted to store electrical energy at a lower potential for sustaining said arc at a predetermined energy and for a predetermined duration,

means for initiating the flow of energy from the storage circuit into the arc, and

a charging circuit for said second capacitive means including reactance means for receiving fixed and successive increments of energy during each discharge cycle of the arc, means for successively transferring said increments of energy from said reactance element to said second capacitive means between successive activations of said arc so that the total amount of energy received by said second capacitive means during each arc cycle is an accumulation of said increments of energy developed on said reactance means; and

controlled switching means for controlling the number of said increments of energy received by said reactance means during each arc cycle.

4,486,692

DC MOTOR CONTROL CIRCUIT FOR DROP-OUT OF STOPPING PULSES IN RECORDER

Masakazu Sonoda; Takashi Terashima, both of Urawa, and Minoru Ozawa, Kokubunji, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 422,711

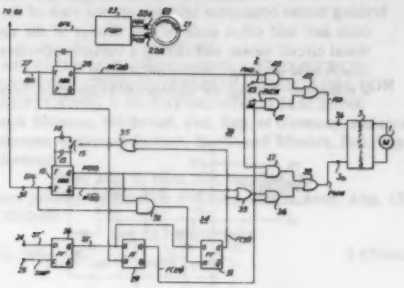
Claims priority, application Japan, Sep. 25, 1981, 56-151635

Int. Cl.³ H02P *3/10*

U.S. Cl. 318—258 **20 Claims**

1. A control circuit for a DC motor in a device arrangement for driving a web having control signals recorded thereon to indicate predetermined positions of the web, comprising frequency generator means associated with said DC motor for generating a frequency signal having a frequency that varies with angular speed of said motor; position signal generating means supplied with said frequency signal for generating a position value that varies step by step with occurrences of said frequency signal to indicate the position of said web relative to said predetermined positions; control signal pickup means for reproducing said control signals from said web when said web is moved therepast; control means for adjusting said position value upon detection of said control signals; brake start signal generating means for generating a brake start signal when said

position value reaches a predetermined value; and drive control means responsive to said brake start signal to halt said DC



motor at a position corresponding to one of said predetermined positions of said web.

4,486,693

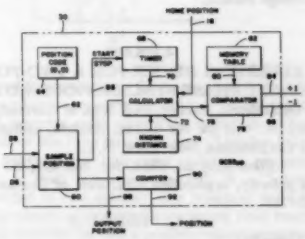
MOTOR VELOCITY CONTROL

Sharbil Hamati, Garland, and M. Alvin Heard, Richardson, both of Tex., assignors to Contitronix, Inc., Garland, Tex.

Filed Jul. 6, 1982, Ser. No. 395,487

Int. Cl.³ G05B *13/00*

U.S. Cl. 318—561 **4 Claims**



1. A method of controlling the angular velocity of a motor shaft comprising the steps of:

(a) timing the movement of said shaft during acceleration, steady state velocity and deceleration over a known distance from a first known point to a second known point,

(b) calculating the angular velocity of said shaft from said time and said distance,

(c) comparing said calculated velocity with a desired velocity at known time intervals, and

(d) increasing the drive current to said motor if said calculated velocity is lower than said desired velocity and decreasing the drive current to said motor if said calculated velocity is greater than said desired velocity.

4,486,694

PROCESS FOR CHANGING A RUNNING DIRECTION OF AN ELECTROMAGNETICALLY GUIDED DRIVERLESS VEHICLE

Toshitsugu Ohba, and Masanao Murata, both of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan

Filed May 20, 1982, Ser. No. 380,254

Claims priority, application Japan, May 22, 1981, 56-78419; May 22, 1981, 56-78418

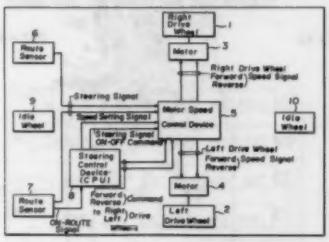
Int. Cl.³ G05D *1/00*

U.S. Cl. 318—587 **10 Claims**

1. A process for changing a running direction of an electromagnetically guided driverless vehicle, which is guided along a guide path comprising two parallel wire conductors, said guide path having at least one branch at a turning point, said turning point being located at the center of intersection of said branch and the main way of said guide path, said process being for use with a vehicle which includes right and left drive wheels rotatably mounted on said vehicle, axes of said drive wheels being in alignment with each other, right and left drive motors for driving said right and left drive wheels, respectively, right and left route sensors mounted on said vehicle for sensing magnetic fields induced by said wire conductors, said route sensors being disposed forwardly of said drive wheels and being disposed substantially in registry with said wire conductors, respectively, one output of said route sensors being used as a steering signal and as an on-route signal, and means responsive to said steering and on-route signals for controlling the direction and speed of rotation of each of said drive motors,

said process comprising the steps of:

deenergizing said right and left drive motors to stop said



vehicle at the turning point in such a manner that the axes of said drive wheels are generally in registry with said turning point;

subsequently driving said right and left drive motors to rotate said right and left drive wheels at the same speed in opposite directions, respectively, so that said vehicle moves angularly in the turning direction about a vertical axis passing through the middle point between said drive wheels;

subsequently detecting a first turn-off of said on-route signal;

subsequently detecting a first turn-on of said on-route signal;

subsequently detecting a second turn-off of said on-route signal;

subsequently detecting a second turn-on of said on-route signal; and

subsequently deenergizing said right and left drive motors to stop the angular movement of said vehicle, so that said vehicle can move along the guide path in the new direction.

4,486,695

PROFILE MEASUREMENT CONTROL FOR A GEAR MEASURING MACHINE

Guy-Francois Blanc, Zurich, and Hans Spaeth, Kloten, both of Switzerland, assignors to Maag Gear-Wheel & Machine Company Limited, Zurich, Switzerland

Filed Jan. 24, 1983, Ser. No. 460,493

Claims priority, application Switzerland, Feb. 1, 1982, 580/82

Int. Cl.³ G05B *1/06*

U.S. Cl. 318—663 **6 Claims**

1. In a profile measurement control for a gear measuring machine, comprising a pivotable lever for infinitely controlling the direction and speed of a drive motor for driving a generating carriage carrying a generating straight edge at which there rolls essentially without slip a base circle disc coupled to a test specimen and pressed against said generating straight edge by a feed carriage, an incremental angle transmitter coupled to said base circle disc, measuring and recording means including a recording chart and a recording chart feed comprising a

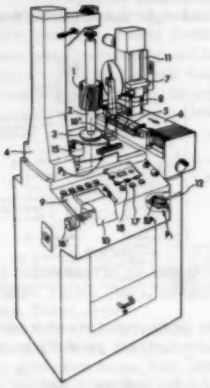
stepping motor controlled by said angle transmitter, an encoding switch having outputs for preselecting a defined diagram length translation ratio, said recording chart being advanced as a function of to the movement of said generating carriage and said diagram length translation ratio preselected at said encoding switch, the improvement which comprises;

a potentiometer including a slider coupled to said pivotable lever;

a voltage attenuating circuit including inputs and an output for taking into account said diagram length translation ratio;

said inputs being connected to said slider of said potentiometer and to said outputs of said encoding switch, respectively;

a first change-over switch including a switching element and two switch contacts;



one of said two switch contacts being connected to said slider of said potentiometer, the other one of said two switch contacts being connected to said output of said voltage attenuating circuit, and said switching element being switched over from one of said two switch contacts to the other one thereof by means of said encoding switch at a predetermined diagram length translation ratio;

a resistor network having an input and an output and serving to vary an output voltage of the profile measurement control proportionally to the radius of said base circle disc; and

said input of said resistor network being connected to a common terminal of said first change-over switch and said output thereof being connected to said drive motor of said generating carriage.

4,486,696

STEPPING MOTOR DRIVING CIRCUIT

Tsuyoshi Matsushita; Makoto Takahashi, and Kazuaki Takaishi, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Tokyo, Japan

Filed Jun. 24, 1983, Ser. No. 508,066

Claims priority, application Japan, Aug. 30, 1982, 57-150209

Int. Cl.³ H02K *29/04*

U.S. Cl. 318—696 **10 Claims**

1. A stepping motor driving circuit comprising:

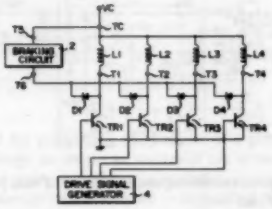
a plurality of switching means connected to first ends of a corresponding number of motor coils of a stepping motor to be driven;

control means for controlling the conduction states of said plurality of switching means to permit excitation currents to sequentially pass through the motor coils over a predetermined period of time;

a plurality of unidirectional circuit means, each unidirectional circuit means including a diode, each diode being respectively connected at one end to said first ends of the corresponding number of the motor coils and connected at the other end to a common terminal; and

braking means connected between second ends of the motor coils and said other ends of said diodes of the unidirectional circuit means and having a variable effective impedance, said braking means comprising:

a transistor having its emitter-collector path connected



between said second ends of the motor coils and said other ends of said diodes of the unidirectional circuit means;

resistor means connected between the emitter and the base of said transistor;

constant voltage means connected between the base and the collector of said transistor; and

a switching circuit connected in parallel with the constant voltage means.

4,486,697

REVERSING DEVICE FOR A TWO-POLE SINGLE-PHASE SYNCHRONOUS MOTOR

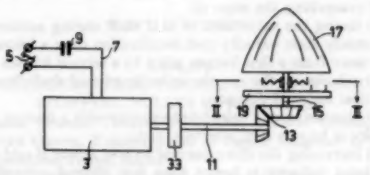
Gerhard Diefenbach, Aachen, Fed. Rep. of Germany, and Erich Krainer, St. Veit an der Glaan, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 20, 1983, Ser. No. 496,703

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1982, 3234717

Int. Cl.³ H02P *3/18*

U.S. Cl. 318—703 **16 Claims**



1. A reversing device for a two-pole single-phase synchronous motor without a starting auxiliary coil, which motor comprises a diametrically magnetized permanent-magnet rotor, whose shaft runs against stops for reversing the direction of rotation, and a capacitor connected in series with the stator exciter coil, characterized in that the reactance of the capacitor at the AC supply frequency is higher than the reactance of the exciter coil, so that the capacitor values comply with:

$$\frac{\omega L - \frac{1}{\omega C}}{R} < 0$$

in which

ω = the angular supply frequency,

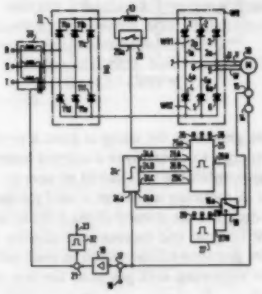
L=the coil inductance
C=the series capacitance
R=the non-reactive motor resistance.

4,486,698

METHOD FOR OPERATING A FREQUENCY CONVERTER WITH INTERMEDIATE DC LINK FOR SUPPLYING A ROTATING-FIELD MACHINE

Christoph Blümner, Höchstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 5, 1981, Ser. No. 290,313
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1980, 3030465
Int. Cl.³ H02P 1/46
U.S. Cl. 318—721 2 Claims



1. A method for operating a frequency converter of the type having an auxiliary commutating device, an intermediate DC link, and an inverter with converter valves in a three-phase bridge circuit of the type having a pair of bridge halves, each bridge half having three converter valves in respective converter arms, at least one converter arm in each bridge half being connected to one another at a common main terminal; for supplying electrical energy to a rotating field machine, the rotating field machine having a predetermined minimum speed of machine operation, the method having the steps of operating the rotating field machine in a high speed range of operation which is greater than the predetermined minimum speed of machine operation; cyclically commutating the electrical energy six times during each rotation of the rotating field machine in response to rotation of the rotating field machine, the cyclical commutation being performed alternately between the bridge halves, and occurring from one converter arm to a subsequently current-carrying converter valve of a further one of the converter branches in the same bridge half, the method comprising the further steps of:

operating the rotating field machine in a first speed range of operation which is below the predetermined minimum speed of machine operation, said first speed range being between a zero speed of rotation of the rotating field machine and a first predetermined speed which is below the predetermined minimum speed of machine operation;

cyclically commutating the electrical energy via the converter valves six during each revolution of the rotating field machine while the rotating field machine is operating in said first speed range;

operating the rotating field machine in a second speed range of operation below the predetermined minimum speed of machine operation, said second speed range being between said first predetermined speed and a second predetermined speed, said second predetermined speed corresponding to the predetermined minimum speed of machine operation; and

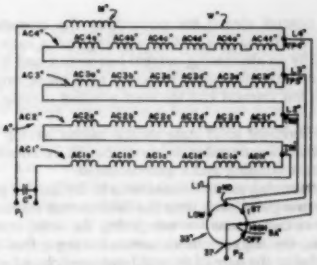
cyclically commutating the electrical energy via the converter valves three times during each revolution of the rotating field machine while the rotating field machine is operating in said second speed range, said cyclical commutation being performed in the converter branches of the two bridge halves of the three-phase bridge circuit so as to occur from the converter valve of a converter branch to a subsequently current-carrying converter valve of another converter branch.

4,486,699

TAPPED AUXILIARY WINDING FOR MULTI-SPEED OPERATION OF ELECTRIC MOTOR AND METHOD THEREFOR

Keith I. Hoemann, and Alan R. Barker, both of St. Louis County, assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 29, 1983, Ser. No. 489,847
Int. Cl.³ H02K 17/08
U.S. Cl. 318—772 14 Claims



1. A multiple speed electric induction motor comprising:

a stator core comprising a stack of laminations of suitable ferromagnetic material, said core having a central bore therethrough and a plurality of slots extending generally radially outwardly from said bore;

a rotor rotatably received within said bore;

windings inserted in said stator slots, said windings comprising a main winding and an auxiliary winding; and

a capacitor in series with said auxiliary winding;

said auxiliary winding comprising a plurality of serially connected coil sets including a first and a last coil set with each coil set having a plurality of serially connected coils placed in said stator slots at substantially equal angular intervals around said central bore so as to constitute the poles of said windings;

a first tap point between said first and last coil sets of said auxiliary winding;

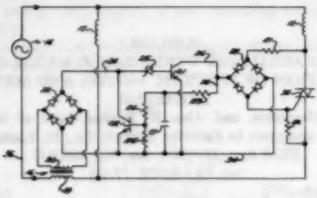
a last tap point between said last coil set of said auxiliary winding and said main winding;

and a selector switch selectively movable from a high speed position in which all of said coil sets of said auxiliary winding are energized in series with said capacitor and in which all of said coil sets of said auxiliary winding and said capacitor are in parallel with main winding such that said motor operates in its high speed mode of operation and a low speed position in which said first coil set of said auxiliary winding is energized in series with said capacitor and in which said first coil of said auxiliary winding set and said capacitor are in parallel with said main winding such that said motor operates in its slow speed mode of operation, with the coils of said auxiliary winding energized during any speed of the motor being physically uniformly distributed around said core so as to result in balanced running of the motor.

4,486,700
UNIVERSAL SINGLE PHASE MOTOR STARTING CONTROL APPARATUS

Keith W. Kawate, and John A. Haug, both of North Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 9, 1983, Ser. No. 492,538
Int. Cl.[3] H02P 1/44
U.S. Cl. 318—781 12 Claims



12. A control circuit for controlling the operation of an induction motor having a start winding and a main winding energized by an alternating current line source and for deenergizing the start winding in response to a phase crossing between the line current and the start winding current comprising:

a three terminal solid state switch means having a pair of terminals connectable in series circuit relationship with the start winding and a gate terminal,

pulse generating means connectable to the line for producing a narrow pulse each time the line current crosses zero,

trigger circuit means for energizing the solid state switch means, the trigger circuit means having a first transistor coupled to the gate of the solid state switch and adapted to energize the switch when the transistor is conductive, the pulse generating means connected to the first transistor so that a pulse transmitted from the pulse generating means to the first transistor will render it conductive,

lockout circuit means including a second transistor connected in parallel circuit relationship with the first transistor and means responsive to a preselected voltage across the solid state switch means to turn on the second transistor to shunt the pulses from the pulse generating means away from the first transistor thereby preventing the triggering of the solid state switch and deenergizing the start circuit.

4,486,701
THERMAL ENERGY CONVERSION

John H. Cover, 24742 Via San Fernando, Mission Viejo, Calif. 92691

Filed Jan. 25, 1982, Ser. No. 342,391
Int. Cl.[3] H02K 44/00; H02N 4/02
U.S. Cl. 322—2 R 13 Claims

1. An apparatus for converting thermal energy into chemical energy, comprising:

(1) a closed fluid loop through which flows an electrically conducting liquid, said loop comprising:

(a) a first substantially vertical column;

(b) a second substantially vertical column;

(c) interconnection means between the top of said first column and the top of said second column; and

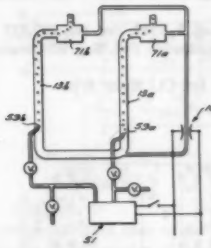
(d) interconnection means between the bottom of said first column and the bottom of said second column.

(2) means for creating a temperature differential between the portions of said liquid in each column by heating the portion of said liquid in said first column and cooling the portion of said liquid in said second column to form a density differential in said liquid and establish a convective flow of said liquid through said loop;

(3) a magnetohydrodynamic generator coupled to said loop for generating electrical energy from said flowing liquid, the amount of electrical energy generated being proportional to the velocity of the said liquid; and

(4) means for supplementing said convective flow to increase the electrical energy generated by said magnetohydrodynamic generator by increasing the density differential between the liquid in each of said columns, comprising:

(a) an electrolytic gas generator coupled to said mangetohydrodynamic generator for using at least a portion of said electrical energy to electrolyze a second liquid to form a gas, said gas containing said chemical energy;



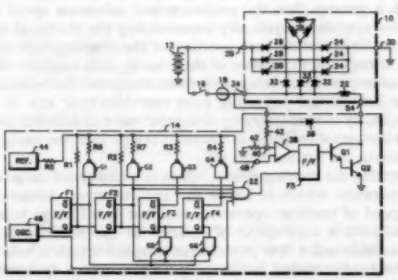
(b) means for introducing a portion of said gas into said first column to decrease the density of the portion of said liquid in said first column and increase the density differential between the portions of said liquid in each column; and

(c) means for removing said gas near the top of said first column.

4,486,702
VOLTAGE REGULATOR WITH NON-LINEAR EXCITATION CONTROL

Arthur J. Edwards, River Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 14, 1984, Ser. No. 580,571
Int. Cl.[3] H02J 7/14; H02P 9/30; G05F 1/56
U.S. Cl. 322—28 7 Claims



1. An alternator regulator for use with an alternator system including a source of alternating current, rectifier means coupled to rectify the current, and means for supplying an electromagnetic field for said source, the regulator comprising:

reference means for supplying a predetermined reference voltage;

oscillator means for supplying a fixed frequency clock signal;

a logic network coupled to the reference means and the oscillator means for supplying a non-linear stepped voltage ramp;

comparator means for comparing the stepped ramp with the output of the alternating current source;

enabling means for enabling the field supplying means;

latching means coupled receive the comparator means output and a second output of the logic network for controlling the enabling means in response thereto.

4,486,703

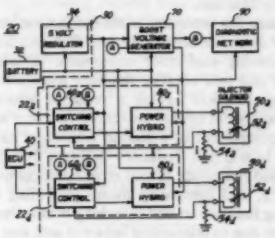
BOOST VOLTAGE GENERATOR

Robert S. Henrich, Farmington Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 27, 1982, Ser. No. 423,937

Int. Cl.³ G05F 1/10

U.S. Cl. 323—222 10 Claims



1. A boost voltage generator (70) for an injector connected to a voltage potential including a battery (32) for periodically generating a voltage signal in excess of such voltage potential in response to pull-in signals input thereto, and for storing the voltage signal on a boost capacitor (352) interposing the voltage generator (70) and the voltage potential (32), comprising:

free running oscillator means (360) for generating a first signal the frequency of which is dependent upon the level of such voltage potential;

power driver means (364) for generating a series of pulses in response to the output of said free running oscillator means (360), the output of said power driver means (364) connected to the anode of a diode (103) and to ground potential for selectively creating a current charge path through a boost coil (350) connected between the battery (32), the diode (103) and the boost capacitor (352) and for thereafter terminating said current path to permit the electrical energy within the boost coil (350) to be transferred and stored on said boost capacitor (352);

boost voltage indicating means including a level shifting means (412, 414) for generating an output signal indicative of the voltage stored on said boost capacitor (352);

inhibit means responsive to the pull-in signals (60) and to the output of the level of shifting means for inhibiting the operation of said free running oscillator (360) during those intervals involving a pull-in signal and during those intervals when said boost capacitor (352) has been charged to a predetermined voltage level; and

no-boost circuit means (370) for generating a signal indicative of the situation that said boost coil (352) has not attained its desired charge within a predetermined time interval.

4,486,704

CONTROL DEVICE FOR AN ELECTROSTATIC DUST SEPARATOR

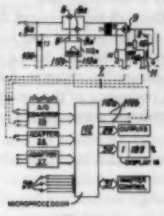
Alf G. Gustafsson, and Sigvard Matts, both of Växjö, Sweden, assignors to Flakt Aktiebolag, Nacka, Sweden

Filed Jul. 15, 1982, Ser. No. 398,654

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1981, 8104574

Int. Cl.³ B03C 3/68

U.S. Cl. 323—246 11 Claims



1. A control device for an electrostatic dust separator having electrodes, an a.c. power supply with rectifiers to generate intermittent power impulses, and means to convert said power impulses to direct current which is supplied to said electrodes, said control device comprising a first means sensing the level of direct current in said separator, a second means sensing the d.c. voltage in the separator, a third means sensing the zero point in the a.c. voltage of said a.c. power supply, and a data processing unit controlling said rectifiers, said data processing unit being coupled to said first, second, and third sensing means so that in response to actual direct current and actual d.c. voltage in the separator and time-related to said zero points in a.c. voltage, said processor both calculates a specific time duration for the power impulses through said rectifiers and also generates switching-in and switching-out pulses and feeds them to the rectifiers.

4,486,705

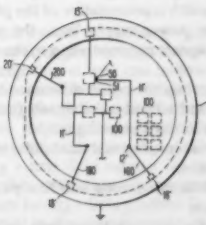
METHOD OF TESTING NETWORKS ON A WAFER HAVING GROUNDING POINTS ON ITS PERIPHERY

Herbert Stopper, Orchard Lake, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 225,580, Jan. 16, 1981,. This application Dec. 2, 1983, Ser. No. 557,524

Int. Cl.³ G01R 31/02, 27/02, 31/28

U.S. Cl. 324—73 R 4 Claims



1. A method of testing a wafer having a plurality of networks formed thereon for interconnecting a plurality of integrated circuit chips, each said network including at least one power supply lead and power pad for supplying power to said integrated circuit chips, a plurality of logic lines and pad lines, each of said pad lines being connected to a logic input or output point as a node of one of said chips and having a single

coupling to one of said logic lines and a position on said wafer, the intercoupling of said logic lines defining the intercoupling connection of the chips of each said network, each network further including at least one test lead from a terminal of the network to a grounding point on the periphery of said wafer, the method comprising:

connecting ground to at least one of said test leads at said grounding point;

connecting a probe to a logic input or output point in said network which is connected to said test lead if the network is properly connected; and

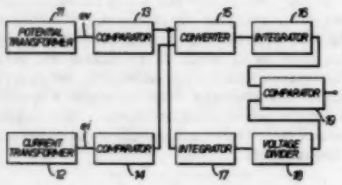
passing a current through said network from said logic input or output point to said ground and measuring the electrical resistance through the line during testing to determine whether the measured resistance falls within expected normal inherent resistance of the measured line or is above or below the expected normal inherent resistance.

4,486,706

POWER FLOW DIRECTION DETECTOR

Shunichi Kobayashi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 27, 1981, Ser. No. 315,446
Claims priority, application Japan, Mar. 5, 1981, 56-030483
Int. Cl.³ G01R *19/14, 21/06*
U.S. Cl. 324—133 **1 Claim**



1. A power flow direction detector for connection to power supply lines to detect delivered or returned power conditions comprising:

first means for producing first pulse signals which have a pulse width representative of the phase of the load voltage across the power supply lines, the polarity of said first pulse signals corresponding to the polarity of said load voltage;

second means for producing second pulse signals which have a pulse width representative of the phase of the load current of the power supply lines, the polarity of said second pulse signals corresponding to the polarity of said load current;

means for converting the phase difference between the respective first and second pulse signals from said first and second means to third pulse signals;

a first circuit for integrating said third pulse signals from said converting means;

a second circuit for integrating said first pulse signals from said first means;

a third circuit for dividing the output voltage from said second circuit into a voltage signal of a fixed level; and

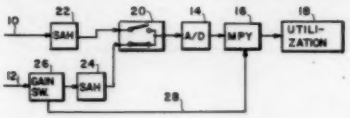
a fourth circuit for comparing the output voltage from said first integrating circuit with the fixed value signal from said third circuit for producing a signal indicative of the direction of the power flow which shows a delivered or returned power condition when the output voltage from said first integrating circuit is respectively smaller or greater than the voltage signal of a fixed level.

4,486,707

GAIN SWITCHING DEVICE WITH REDUCED ERROR FOR WATT METER

Bruce E. Randall, Alpharetta, and Jay K. Marshall, Marietta, both of Ga., assignors to Sangamo Weston, Inc., Atlanta, Ga.

Filed Sep. 24, 1982, Ser. No. 423,399
Int. Cl.³ G01R *7/00*
U.S. Cl. 324—142 **23 Claims**



1. In a switching apparatus for generating a switching function for controlling an input signal having at least a first component of a first frequency, said switching function having an error component at a frequency related to said first frequency,

error reducing means for reducing errors resulting from interaction between said first component of said input signal and said error component of said switching function, said error reducing means comprising:

first means for receiving said error component of said switching function,

second means for receiving another function, and

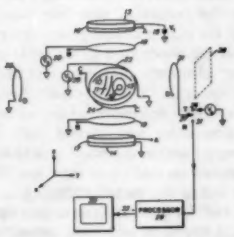
combining means connected to said first and second means for combining said error component of said switching function and said another function to produce a second switching function having a reduced presence of said error component of said switching function and having a second component of a second frequency having a relationship to said first frequency different from the relationship of said frequency of said error component to said first frequency, said combining means providing said second switching function to said switching means thereby reducing errors due to interaction between said first component of said input signal and said error component of said switching function.

4,486,708

SELECTIVE MATERIAL PROJECTION IMAGING SYSTEM USING NUCLEAR MAGNETIC RESONANCE

Albert Macovski, 2505 Alpine Rd., Menlo Park, Calif. 94025

Filed Dec. 21, 1981, Ser. No. 332,926
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—309 **26 Claims**



1. In a method for making selective material projection images of a volume using nuclear magnetic resonance the steps of:

measuring the two-dimensional projection of a plurality of components of the nuclear magnetic resonance activity; and

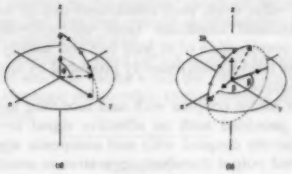
processing these components to produce one or more two-dimensional projection images of specific materials of the volume.

4,486,709

DEPTH AND REFOCUSING PULSES FOR USE WITH INHOMOGENEOUS RADIOFREQUENCY COILS IN NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY

Max R. Bendall, 274 Ford Rd., Burbank, Queensland, 4123, Australia

Filed Nov. 22, 1982, Ser. No. 443,607
Int. Cl.³ G01R 33/08
U.S. Cl. 324—314 15 Claims



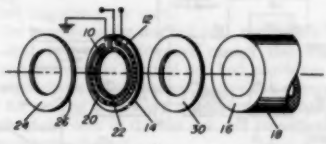
1. A method of analysing a sample by pulsed nuclear magnetic resonance using a radiofrequency irradiation and detection coil which provides an inhomogeneous radiofrequency field, comprising reducing nuclear magnetic resonance signals from regions where a single radiofrequency pulse angle differs from $\pi/2$ radians by applying a second pulse after a first pulse prior to signal detection by a receiver, wherein the second pulse has a pulse angle twice as large as the pulse angle of the first pulse and the phase of the second pulse is alternated through all four 90° phase shifts during subsequent transients such that an equal number of transients are acquired for each of the four phase shifts, and wherein the receiver phase is inverted when the phase of the second pulse is shifted +90° or −90° relative to the phase of the second pulse used for the first transient.

4,486,710

RADIO FREQUENCY COUPLED DIFFERENTIAL SENSOR COIL FOR IMPROVED MUZZLE VELOCITY MEASUREMENTS

Jimmy Q. Schmidt, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 8, 1982, Ser. No. 415,956
Int. Cl.³ G01P 3/66
U.S. Cl. 324—179 6 Claims



1. A radio frequency coupled differential sensor assembly for improved measurement of projectile velocity at the muzzle end of a gun, which comprises;

clamping means for fixedly holding said sensor assembly to said muzzle end of said gun;

oscillator means for generating a radio frequency signal;

first sensor means electrically coupled to said oscillator means for resonating at approximately the same frequency of said oscillator means, and for generating a modulated signal in response to passage of a projectile therethrough and in response to extraneous sources;

second sensor means operatively disposed in the same plane and coaxial with said first sensor means and electrically coupled to said oscillator means, for resonating at the same frequency of said oscillator, and for generating a modulated signal in response to said extraneous sources but not in response to the passage of said projectile through said first and second sensor means;

shield means fixedly positioned by said clamping means in front of said first and second sensor means for electromagnetically shielding said first and second sensor means and for confining the radiating fields from said first and second sensor means;

seal means operatively disposed intermediate said first and second sensor means for preventing high pressure gases from penetrating between the muzzle end of said gun and first and second sensor means;

first detector means electrically coupled to said first sensor means for generating a detected and filtered signal;

second detector means electrically coupled to said second sensor mean for providing a filtered extraneous signal;

differential amplifier means, having a non-inverting input terminal electrically coupled to the output of said first detector means, and an inverting input terminal electrically coupled to the output of said second detector means, for canceling the components of said detected and filtered signal and said filtered extraneous signal which are equal, and for generating an output pulse of the components of said detected and filtered signal and said filtered extraneous signals which are not common to each other; and

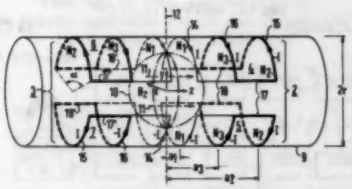
amplifier means electrically coupled to the output of said differential amplifier means for generating an output signal proportional to the length of said projectile.

4,486,711

GRADIENT FIELD COIL SYSTEM FOR NUCLEAR SPIN TOMOGRAPHY

Georg Frese, and Horst Siebold, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,454
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133873
Int. Cl.³ G01R 33/08
U.S. Cl. 324—319 22 Claims



1. A gradient coil system for an image-generating, nuclear magnetic resonance tomographic apparatus, the gradient coil system being arranged on at least one hollow cylindrical carrier, the cylindrical carrier having a radius r and a central axis which extends along the z-direction of an orthogonal x, y, z coordinate system, the coordinate system having an origin located in the center of an imaging region within said carrier, the system having a base field magnet for producing a magnetic field B_z in the z-direction, the magnetic field of said gradient coil system having a field gradient $G_z=\delta B_z/\delta z$ which is essentially constant in the imaging region, the system further having at least two ring-shaped coils arranged symmetrically with respect to an x-y plane of symmetry through the center of the imaging region for conducting current in opposite directions, at least two pairs of saddle-shaped coils arranged approximately symmetrically with respect to the plane of symmetry for generating a field gradient $G_x=\delta B_z/\delta x$ in the x-direction and a corresponding field gradient $G_y=\delta B_z/\delta y$ in the y-direction, the field gradients being substantially constant, the saddle-shaped coils being coupled to a source of electrical current

and each having respective straight conductor sections in the z-direction and first and second arc-shaped conductor sections in the circumferential direction perpendicular to the z-axis, said first arc-shaped conductor section being arranged adjacent said plane of symmetry and said second arc-shaped conductor section being arranged farther away from said plane of symmetry than said first arc-shaped conductor section, adjacent straight conductor sections in each pair of the saddle-shaped coils conducting electrical current in the same direction with respect to each other, and in the opposite direction with respect to corresponding straight conductor sections in the other pair of saddle-shaped coils arranged symmetrically on the other side of the plane of symmetry, the gradient coil system further comprising a third arc-shaped conductor section in each saddle-shaped coil, said third arc-shaped conductor section being connected in parallel with the first arc-shaped conductor section of the associated saddle-shaped coil, said third arc-shaped conductor section being arranged between the first and second arc-shaped conductor sections, the first, second and said third arc-shaped conductor sections being arranged at respective first, second, and third predetermined distances from the plane of symmetry and each containing a respective number of turns of conductive material, the first, second and said third arc-shaped conductor sections having respective predetermined electric linkage factors, magnitudes of said electric linkage factors being equal to a product of the electrical current being conducted through the respective arc-shaped conductor section and the number of turns of conductive material in the respective arc-shaped conductor section, the magnitudes of said electric linkage factors corresponding to said respective distances of the first, second, and said third arc-shaped conductor sections from the plane of symmetry.

4,486,712

FREQUENCY DEPENDENT PULSED GAIN MODULATED METALLIC OBJECT DETECTOR

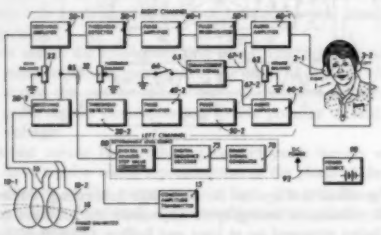
Harold J. Weber, P.O. Box 214, 20 Whitney Dr., Sherborn, Mass. 01770

Filed Sep. 25, 1981, Ser. No. 305,468

The portion of the term of this patent subsequent to Jul. 3, 2001, has been disclaimed.

Int. Cl.³ G01V *3/11, 3/165*

U.S. Cl. 324—329 **14 Claims**



1. Metal detector apparatus adapted to provide a sensory indication of proximate orientation between the detector and an obscure metallic object; comprising:

a. transmitter means providing a source of high frequency alternating current energy having substantially constant frequency and amplitude;

b. portable transmitting loop antenna means, coupled with said transmitter means, effective to produce a radiated electromagnetic field;

c. receiving loop antenna means disposed about the transmitting loop antenna means, with a substantially fixed arrangement predetermined to effectively provide a minimal received signal therefrom as produced by electrical null of electromagnetic coupling directly therebetween, whilst producing increased received signal proportional to the relative imbalance of said null wrought by the presence of a metallic object within the combined transmitting loop and receiving loop antenna means field of influence;

d. digital sequency signal source means effectively producing several series of pulse train signals having different intrinsic periodicity rates therebetween while having harmonic relationship thereamongst;

e. digital-to-analog stepped signal converter means coupled with said sequency signal source, effective to receive pulse train signals therefrom and produce a composite signal comprising a repetitious continuum of various amplitude value steps, each constituent step of which has a predetermined amplitude value correspondent with a unique combination of at least one and usually several of the pulse train signals instantly produced by said sequency signal source;

f. receiver means coupled with said receiving loop antenna means, provided with an effective signal level control input thereto coupled with said composite signal, and a converted output therefrom; operative to combine, as by modulation, said received signal with said composite signal so as to produce a repetitive sequence comprising bursts of converted received signal having various values of predetermined amplitude; and further includes threshold detector means responsive with the instant values of said converted received signals to repetitively produce at least a first level pulse signal therefrom when said converted received signal exceeds a predetermined threshold value, and a second level pulse signal therefrom when said converted received signal shortfalls the predetermined threshold value;

g. indicant means coupled to said pulse signal produced by said threshold detector means; and,

h. direct current power source means effective to provide operating voltage and current to each of the thereto coupled functional elements comprising the said detector.

4,486,713

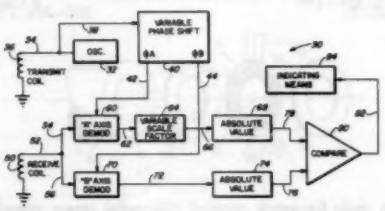
METAL DETECTOR APPARATUS UTILIZING CONTROLLED PHASE RESPONSE TO REJECT GROUND EFFECTS AND TO DISCRIMINATE BETWEEN DIFFERENT TYPES OF METALS

Jack D. Gifford, 4943 W. Brown, Glendale, Ariz. 85302

Filed Sep. 28, 1981, Ser. No. 306,301

Int. Cl.³ G01V *3/10;* **G01R** *33/02*

U.S. Cl. 324—329 **8 Claims**



1. Controlled phase responsive metal detector apparatus, comprising, in combination:

a transmit coil for providing a magnetic field output signal at a desired frequency;

oscillator means for providing the desired frequency for the transmit coil output signal;

a receive coil for receiving signals indicative of the presence of mineralized soil and metals in response to the output signal of the transmit coil;

sampling means for sampling the signals received by the receive coil at predetermined phase relationships with respect to the output signal, including

a first demodulator for sampling the signals at a first pre-

determined phase relationship and for providing a first output signal responsive thereto, and

a second demodulator for sampling the signals at a second predetermined phase relationship and for providing a second output signal responsive thereto;

variable scale factor means for providing a desired algebraic relationship between the output signals from the first and second demodulators;

means for determining the absolute value of the output signals from the first and second demodulators;

means for comparing the absolute values of the output signals from the first and second demodulators and their algebraic relationship; and

means for providing a third output signal in response to the compared absolute values when the values are within the desired algebraic relationship to discriminate among metals detected.

4,486,714

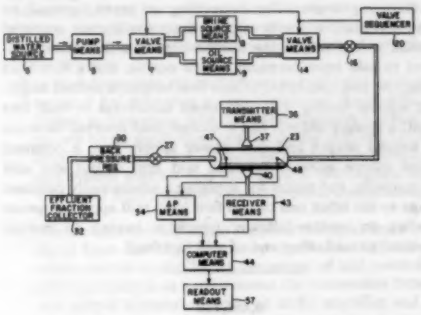
METHOD AND APPARATUS FOR MEASURING RELATIVE PERMEABILITY AND WATER SATURATION OF A CORE OF EARTHEN MATERIAL

Lorne A. Davis, Jr., and Dale F. Brost, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 8, 1982, Ser. No. 406,742

Int. Cl.³ G01V *3/12*; E21B *49/02*; G01N *27/00*

U.S. Cl. 324—376 **9 Claims**



6. Apparatus for determining the oil and water permeabilities and the water saturation of a core of earthen material comprising:

a test cell containing the core,

means for irradiating the test cell with microwave energy,

means for receiving microwave energy that has passed through the core in the test cell and providing a signal corresponding to the received microwave energy,

means for sensing a pressure drop along a predetermined length of the core in the test cell and providing a signal representative thereof,

means connected to the pressure drop sensing means and to the receiver means for determining the oil and water relative permeabilities of the core in accordance with the sensed pressure drop and the flow rate of the liquid and for determining the water saturation of the core in accordance with the signal from the receiver means.

4,486,715

FREQUENCY SHIFT KEY DEMODULATOR

Michael F. Maas, White Bear Lake, and Max S. Hendrickson, Forest Lake, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

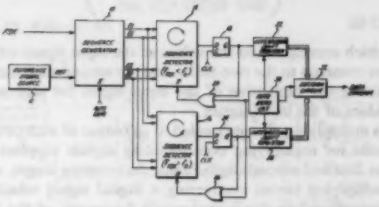
Filed Aug. 4, 1982, Ser. No. 404,955

Int. Cl.³ H03D *13/00*; H04L *27/14*; H03K *9/06*

U.S. Cl. 329—50 **16 Claims**

1. A circuit for determining whether an input signal has a frequency greater than or less than a reference signal, the circuit comprising:

means for producing a digital code as a function of the input and reference signals, the digital code being representative of a phase angle between the input and reference signals and changing in a first predetermined sequence when the frequency of the input signal is less than the frequency of the reference signal and changing in a second predetermined sequence when the frequency of the input signal is greater than the frequency of the reference signal;



first sequence detector means for receiving the digital code and providing a signal when the first predetermined sequence is detected;

second sequence detector means for receiving the digital code and providing a signal when the second predetermined sequence is detected; and

means for providing an output as a function of signals from the first and second sequence detector means, the output indicating whether the input signal has a frequency greater than or less than the reference signal.

4,486,716

DIGITAL FM DEMODULATOR USING DELAY CIRCUITS

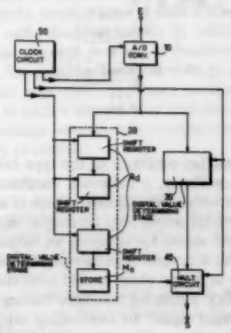
Gérard Le Floch, Montgeron, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 14, 1982, Ser. No. 388,386

Claims priority, application France, Jun. 24, 1981, 81 12412

Int. Cl.³ H03D *3/18*; H03K *9/06*

U.S. Cl. 329—107 **7 Claims**



1. A digital circuit for demodulating a signal, which signal was modulated in accordance with the relation

$$X = A \sin\left(\omega_o t + \int_0^t f(t) \cdot dt + \varphi_o\right)$$

wherein ω_o is the carrier, f(t) the modulating signal, and A and

φ_o are constants, and then analogue-to-digitally converted, characterized in that said digital circuit comprises:

(A) an input, to which said digitally converted signal is applied, two distinct paths arranged in parallel with each other and coupled to said input, said paths being formed by two digital value determining stages, the first stage determining the values of the function

$$M = (1/A)\cos\left(\omega_o t + \int_0^t f(t)\cdot dt + \varphi_o\right)$$

which correspond to the values of the input signal which are common to the two paths, and the second stage determining the derivative of the input signal for said same values of the input signal;

(B) a multiplying circuit coupled to an output of each of said paths for multiplying corresponding signals supplied by the first and second digital value determining stages, said multiplying circuit recovering a digital signal which is proportional to the instantaneous frequency of the frequency-modulated input signal; and

(C) a clock circuit for determining the rates of operation of the first and second digital value determining stages and the multiplying circuit.

4,486,717

PHASE CONTROLLED OSCILLATOR INCLUDING A PHASE LOCK LOOP AND DUAL SWEEP OSCILLATORS

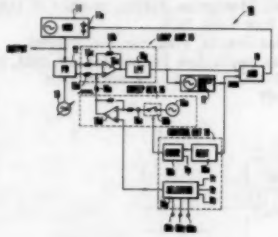
Toyosaka Yamasaki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1983, Ser. No. 456,100

Claims priority, application Japan, Jan. 7, 1982, 57-1656

Int. Cl.³ H03L *7/00*

U.S. Cl. 331—4 **9 Claims**



1. In a phase controlled oscillator of the type comprising a voltage controlled oscillator, a reference oscillator, a phase comparator supplied with output signals of both of said oscillators, a loop amplifier for amplifying an output signal of said phase comparator and means for applying an output signal of said loop amplifier to a control input termial of said voltage controlled oscillator to form a phase locked loop, the improvement comprising a first sweeping oscillator having an output voltage, a control input signal for controlling said oscillator voltage, said first sweeping oscillator connected to the control input terminal of said voltage controlled oscillator and wherein said first sweeping oscillator generates a first sweeping signal in a limited output voltage range; a second sweeping oscillator which generates a second sweeping signal having an output amplitude smaller than that of said first sweeping oscillator when said phase locked loop is in a non-locked state, means for applying said second sweeping signal to said phase locked loop, wherein said second sweeping oscillator stops its oscillation when said phase locked loop is in a locked state; and a control circuit which detects stoppage of oscillation of said second sweeping oscillator to hold the output voltage of said first sweeping oscillator at a predetermined voltage.

4,486,718

HIGH GAIN TRANSISTOR AMPLIFIER PRODUCING AN OUTPUT FREE FROM NOISE CARRIED ON THE POWER VOLTAGE

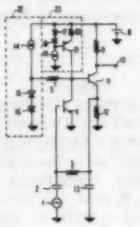
Mitsutoshi Sugawara, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1982, Ser. No. 360,085

Claims priority, application Japan, Mar. 20, 1981, 56-41495

Int. Cl.³ H03F *1/26, 3/04*

U.S. Cl. 330—149 **9 Claims**



8. A high-gain amplifier comprising: an input terminal; an output terminal; a power supply line; a reference potential terminal; a first amplifying section having a first input connected to said input terminal, a first output, and a first load having one end connected to said first output; a second amplifying section having a second input connected to said first output, a second output, and a second load inserted between said second output and said power supply line; a constant current source inserted between said first output and said power supply; and means for applying a substantially constant voltage to the other end of said first load, said applying means including an emitter-follower transistor having an emitter connected to said other end of said first load.

4,486,719

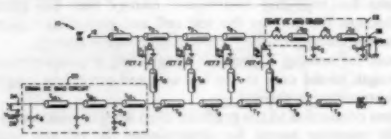
DISTRIBUTED AMPLIFIER

Yalcin Ayasli, Waltham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jul. 1, 1982, Ser. No. 394,242

Int. Cl.³ H03F *3/60*

U.S. Cl. 330—286 **10 Claims**



1. In combination:

(a) a plurality of successively coupled transistors, each one thereof having an input electrode, an output electrode, and a grounded electrode, a first one of such transistors having the input electrode thereof coupled to an input terminal and a last one of such transistors having the output electrode thereof coupled to an output terminal;

(b) means for interconnecting said input electrodes; and

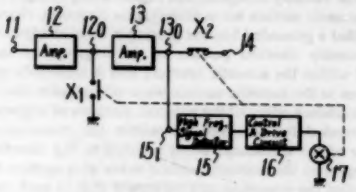
(c) means, coupled to the output electrodes of the plurality of transistors, for coupling a grounded bias voltage source to the plurality of output electrodes through a direct current path and including a resistor coupled in shunt between ground and the direct current path.

4,486,720

PROTECTIVE CIRCUIT FOR POWER AMPLIFIER

Masahiro Hirano, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 28, 1982, Ser. No. 402,637
Claims priority, application Japan, Aug. 1, 1981, 56-121107
Int. Cl.³ H02H 7/20
U.S. Cl. 330—298 7 Claims



1. A protective circuit for use with a plurality of audio amplifiers, a plurality of loads and a system selector including first and second changeover switches, said first changeover switch being connected between a plurality of signal sources and said plurality of audio amplifiers and said second changeover switch being connected between said plurality of audio amplifiers and said plurality of loads said protective circuit comprising:

(a) an input terminal connected to an output terminal of at least one of said plurality of audio amplifiers to be protected and supplying an output signal to one of said plurality of loads;

(b) a high frequency signal detector connected to said input terminal for detecting a high frequency signal which is higher in frequency than the audio frequency range and caused by an oscillation loop including said one of audio amplifiers and the first and second changeover switches of said system selector and producing a first control signal when said high frequency signal exceeds a predetermined value;

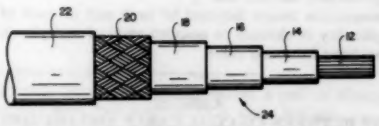
(c) control and driving means supplied with said first control signal from said high frequency signal detector; and protective means controlled by the output of said control and driving means so as to disconnect the connection between said output terminal of said one audio amplifier and said one load.

4,486,721

HIGH FREQUENCY ATTENUATION CORE AND CABLE

Rajendra S. Cornelius, Palo Alto; Hans E. Lunk, Menlo Park; Albert R. Martin, Oakland, and Mark D. Mendenhall, Fremont, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 7, 1981, Ser. No. 328,346
Int. Cl.³ H01P 3/00
U.S. Cl. 333—1 11 Claims



1. A high frequency attenuation cable core comprising:

at least one conductor;

a high frequency absorption medium for attenuating high frequency energy propagating through a cable, the absorption medium surrounding the conductor;

dielectric surrounding the absorption medium; and

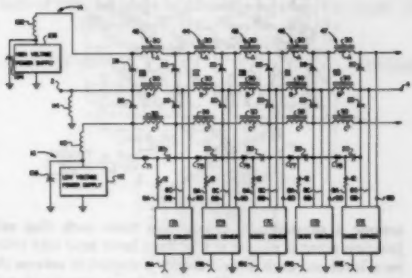
an outer layer made from material having a high complex dielectric constant directly surrounding the dielectric, said outer layer being made from a titanate loaded polymer.

4,486,722

PIN DIODE SWITCHED IMPEDANCE MATCHING NETWORK HAVING DIODE DRIVER CIRCUITS TRANSPARENT TO RF POTENTIAL

Harvey L. Landt, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 18, 1982, Ser. No. 349,750
Int. Cl.³ H03H 7/40
U.S. Cl. 333—17 M 20 Claims



8. A radio frequency impedance switching network comprising:

first means for providing an impedance including at least one selectable impedance portion which may be individually selected to vary said impedance and arranged to form an input and output;

second means for coupling a source of radio frequency potential to said input; and

third means coupled to said first means for selecting said individual selectable impedance portion to vary said impedance and including at least one PIN diode, a first voltage source, a second voltage source having a voltage higher than said first voltage source, and means for coupling said first voltage source and said second voltage source to said PIN diode to selectively forward bias and reverse bias said PIN diode, respectively, in such a manner that there is no direct radio frequency path to radio frequency ground potential through resistive or reactive impedances of said means for coupling and said voltage sources for controlling said selectable impedance portion to vary the impedance in such a manner that said means for coupling and said voltage sources are transparent to said radio frequency potential.

4,486,723

DIODE SWITCHING SYSTEM FOR A SELECTABLE IMPEDANCE MATCHING NETWORK

Morris Lysobey, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 6, 1983, Ser. No. 456,033
Int. Cl.³ H03H 7/40
U.S. Cl. 333—17 M 11 Claims

6. In a system for matching the impedance of an antenna to the impedance presented by a utilization device, said system including an impedance matching network coupling said utilization device to said antenna, said network including a reactive element adapted to be switched in and out of said network, a switching system comprising:

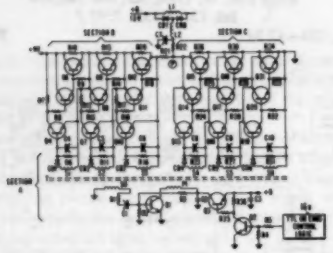
first and second oppositely poled PIN diodes connected in series across said reactive element;

a first switch means connected between a circuit point at a certain voltage level and a junction point between said

diodes, said first switch means including a voltage level inversion means;

a second switch means connected between said junction point and a point of reference potential, said certain voltage level having an absolute value much larger than said reference voltage level; and

a control means coupled to said first and second switch means and responsive to a first input control voltage level to cause said first switch means to assume a substantially non-conductive state and said second switch means to



assume a substantially conductive state such that said junction point is placed at a voltage level near said reference level and each of said diodes is caused to assume the same one of its high and low impedance states, and, said control means being responsive to a second input control voltage level to cause said first switch means to assume a substantially conductive state and said second switch means to assume a substantially non-conductive state such that said junction point is placed at a voltage level near said certain voltage level and each of said diodes is caused to assume the other of its impedance states.

4,486,724

ACOUSTIC SURFACE WAVE DEVICE

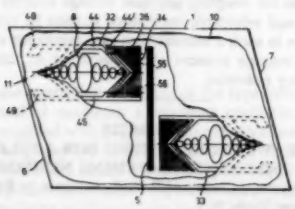
John Schofield, Coulsdon, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 15, 1983, Ser. No. 485,531

Claims priority, application United Kingdom, Apr. 19, 1982, 8211248

Int. Cl.³ H03H *9/145, 9/64*

U.S. Cl. 333—194 **21 Claims**



1. An acoustic surface wave device comprising a body of piezoelectric material on one surface of which is formed an acoustic surface wave transducer including at least one apodized interdigital array of electrodes in which a first and second set of electrodes are respectively connected to a corresponding one of two opposite bus-bars such that, in operation, at least one bus-bar is ungrounded and is therefore capable of varying in voltage at signal frequency relative to a quasi-steady ground potential established on or about the electrode-bearing surface region of said body at least in the vicinity of said acoustic surface wave transducer, so that an acoustic surface wave directed along an acoustic surface wave propagation direction can be propagated or received via a communicating end of the acoustic surface wave transducer, that portion of an ungrounded bus-bar adjacent a communicating end of the acoustic surface wave transducer being directed inwardly into the acoustic surface wave beam aperture substantially to the central axis of the apodized array, said transducer further including a velocity compensation region comprising dummy electrodes parallel to the electrodes of the interdigital array and connected to a grounded bus-bar, the outer communicating end of the velocity compensation region being at right angles to the acoustic surface wave propagation direction, characterized in that a grounded bus-bar portion is located adjacent the said inwardly directed portion of the ungrounded bus-bar situated within the acoustic aperture and is uniformly spaced therefrom in the acoustic surface wave propagation direction, facing boundary edges of the adjacent portions of ungrounded and grounded bus-bars situated within the communicating aperture of the transducer being inclined to the direction at right angles to the acoustic surface wave propagation direction, so that the innermost and outermost ends of each respective said edge are correspondingly displaced relative to one another in the acoustic surface wave propagation direction by at least 0.8λ, and the inclination of either said edge is at no point less than that of a notional straight line joining corresponding notional innermost and outermost points which are displaced in the propagation direction by 0.8λ, the arrangement being such that the main response lobe, for undesired acoustic surface waves generated or received by an acoustic surface wave transducing element formed by said facing boundary edges of the bus-bars situated within the communicating aperture, is directed obliquely to the acoustic surface wave propagation direction.

4,486,725

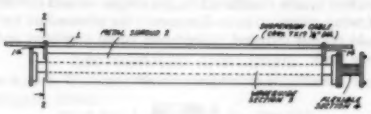
PROTECTIVE SHEATH FOR A WAVEGUIDE SUSPENDED ABOVE GROUND

Charles P. Majkrzak, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 23, 1982, Ser. No. 410,806

Int. Cl.³ H01P *1/30*

U.S. Cl. 333—248 **55 Claims**



1. An arrangement to support and protect a horizontal waveguide having a plurality of waveguide sections connected to each other in tandem suspended between two given spaced points above ground comprising:

a cable extending between said two points;

a plurality of shrouds each encasing a substantial length of a different one of said plurality of sections for support and protection thereof; and

a suspension means fastened to each end of each of said plurality of shrouds to suspend each of said plurality of sections from said cable.

4,486,726

JOINT BETWEEN COAXIAL CABLE AND MICROWAVE COMPONENT

Robert H. Schafer, Perkasie, Pa., and Andreas Bosshard, Herisau, Switzerland, assignors to UTI Corporation, Collegeville, Pa. and Huber & Suhner Ltd., Herisau, Switzerland

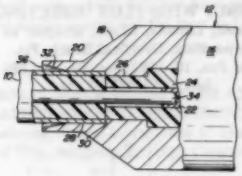
Filed Oct. 7, 1982, Ser. No. 433,295

Int. Cl.³ H01P *1/04*

U.S. Cl. 333—260 **8 Claims**

1. A connectorless joint between a coaxial cable and a micro-

wave component comprising a microwave component having a tubular metal housing, a coaxial cable havng a metal outer jacket, one end of said component having an integral female receptacle in a first axial bore, a dielectric surrounding said receptacle and being located between the surface of said bore and said receptacle, said one end of said component terminating at a second axial bore which communicates with one end of



said first bore, the diameter of the second bore being greater than the diameter of the first bore so as to define a radial shoulder, the coaxial cable having its center conductor projecting beyond an end face, said cable extending into said second bore with said cable end face contacting said shoulder, said cable center conductor contacting said receptacle, and said one end of said component being metallurgically bonded to the outer jacket of said coaxial cable.

4,486,727

ELECTROMAGNETIC RELAY

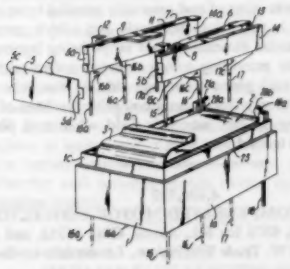
Albert L. Freeman; Brian H. Taylor, both of Harlow, and Roy E. R. Smith, Bishop's Stortford, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 21, 1982, Ser. No. 421,674

Claims priority, application United Kingdom, Sep. 22, 1981, 8128565

Int. Cl.³ H01H *67/00*

U.S. Cl. 335—106 **2 Claims**



1. A dual-in-line relay comprising:

a generally rectangular casing having a pair of elongated parallel sides, two opposite ends, and a bottom;

a motor unit mounted in said casing having elongated sides spaced from said sides of said casing forming two channels on opposite sides of said motor unit;

said motor unit including a core, a bobbin having a winding thereon surrounding said core, a yoke, and terminals on opposite sides of said motor unit adjacent to one end thereof each connected to an end of said winding;

a pair of sidewall elements, each said element comprising an insulator having terminals mounted thereon, said terminals being associated with fixed and movable relay contacts supported by said insulator;

each of said sidewall elements being mounted lengthwise in a corresponding one of said channels, with said terminals thereof aligned with one of said motor unit terminals so that there is provided two rows of terminals; and

said terminals of said motor unit and of said sidewall elements extending through said bottom of said casing.

4,486,728

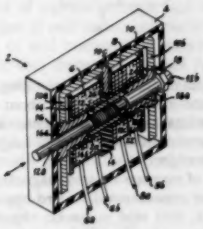
SHARED FLUX RECIPROCAL ELECTROMAGNETIC ACTUATOR

Jerome K. Hastings, Sussex, and James H. Bigelow, Milwaukee, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 9, 1982, Ser. No. 406,614

Int. Cl.³ H01F *7/08*

U.S. Cl. 335—256 **19 Claims**



1. Electromagnetic actuator means comprising an armature plunger for reciprocally axially shuttling between magnetic paths having common overlapping portions through the plunger provided by magnetically continuous yoke means directing the flux paths of a pair of coaxial coils such that when either coil is energized a first path is created around that coil through the plunger and a second flux path is created around both coils through the plunger, the first path pulling the plunger to close a magnetic air gap, the second path holding the plunger in place, the flux paths from the axial ends of said plunger extending substantially only axially to said yoke means, said yoke means having a central leg extending radially between said coils, said leg having an inner end facing said plunger and separated therefrom by a radial gap, the axial length of said radial gap being no greater than the axial spacing of said coils, the ratio of the permeances of the two paths being controlled such that one path always overpowers the other, preventing residual magnetic latching, to insure plunger movement in either direction without the need for mechanical assistance.

4,486,729

DEVICE TO MAKE AN OBJECT FLOAT THROUGH THE UTILIZATION OF MAGNETS

Hae-Chung Lee, #801, 6 Dong, Samik Apt., 20-1, Seocho-dong, Kangnam-ku, Seoul, Rep. of Korea

Filed May 27, 1983, Ser. No. 499,142

Claims priority, application Rep. of Korea, Dec. 21, 1982, 5716/1982

Int. Cl.³ H01F *7/02*; A63H *33/26*

U.S. Cl. 335—306 **8 Claims**

1. A magnetic suspension object and road system comprising:

a magnetic road, including:

a magnet means defining an upwardly-presented, longitudinally elongated road surface having but one kind of magnetic pole presented upwardly, and

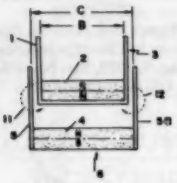
at least one side of said road surface being flanked along the length thereof with a wall of non-magnetic material, said

wall extending substantially above said road surface; and a magnetic object, including:

magnet means defining a downwardly-presented, longitudinally elongated arrangement of magnets constrained to have but said one kind of magnetic pole presented downwardly at an underside of said magnetic object;

said system further including means cooperatingly provided on said magnetic road and on said magnetic object which are constructed and arranged for

maintaining said magnetic object adjacent said wall of non-magnetic material, and



preventing the magnetic object from rolling over away from said wall of non-magnetic material about a generally horizontal longitudinal axis in such a manner as would result in downward presentment of opposite magnetic poles from said magnetic object,

said arrangement of magnets on said magnetic object being so elongated and so concentrated toward opposite ends of said magnetic object, that said magnetic object is constrained against flipping over in an end-over-end sense, so that said magnetic object may be supported above said road surface by repelling magnetic forces for movement along said road surface.

4,486,730

DISC COIL WINDING OF INTERWOUND SINGLE OR DOUBLE COILS

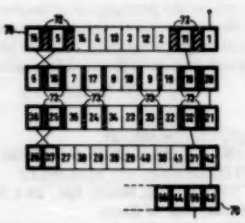
Gottfried Broszat, Waiblingen-Hegnach, Fed. Rep. of Germany, assignor to Transformatoren Union Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 431,625

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1982, 3209350

Int. Cl.³ H01F *15/14*

U.S. Cl. 336—69 **8 Claims**



1. Disc coil winding of interwound coils formed of winding conductors covered with normal insulation, the winding having a radially inner and a radially outer surface, a plurality of the coils being disposed at an input to the winding, and having respective turns thereof located at the inner and the outer surface of the winding as well as respective turns thereof located radially adjacent thereto, comprising supplemental insulations for reinforcing the normal insulation, said supplemental insulations extending from respective starting locations both between the turn located at the inner surface and the turn adjacent thereto as well as between the turn located at the outer surface and the turn adjacent thereto for protecting at least one edge of the respective turns, the coils having a turn capacitance between respective turns thereof free of said supplemental insulations which is greater than the turn capacitance between the respective turns thereof provided with said supplemental insulations, said supplemental insulations being formed as a spacer having a substantially rectangular cross section disposed radially between the respective turns to be supplementarily insulated, said spacer having a width in axial direction equal to the corresponding width of one of the winding conductors covered with normal insulation.

4,486,731

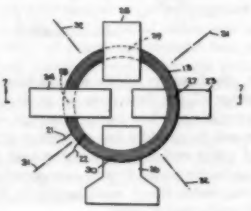
COIL ASSEMBLY WITH FLUX DIRECTING MEANS

Vernon C. Westcott, Lincoln, Mass., assignor to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Jun. 10, 1982, Ser. No. 386,886

Int. Cl.³ H01F *27/24*

U.S. Cl. 336—212 **6 Claims**



1. A coil assembly, including a coil, for use in a communication system in which coupling between said assembly and another communication component is to be established by linking said coil of said coil assembly with said component by a magnetic field, said coil having electrically conductive turns assembled in the form of a flat pancake shape loop encircling a central axis and having a thickness dimension parallel to said axis substantially less than its dimension normal to said axis, and a plurality of strips of magnetically permeable material disposed each overlapping a different circumferential area of said coil with at least a first and second one of said strips located on opposite sides of and generally parallel to an imaginary plane that is normal to said axis and which generally bisects said thickness dimension, said strips being interrelated with said coil for providing a low reluctance flux path that passes through said plane from one side to the other side thereof for inductively linking said coil with the lines of magnetic flux making up said magnetic field when said plane is oriented parallel to said flux lines.

4,486,732

AMBIENT COMPENSATED MOTOR PROTECTOR

Robert M. Wells, 4371 Ira Rd., Akron, Ohio 44313, and Alton R. Wells, 4573 W. Trade Winds Ave., Lauderdale-by-the-Sea, Fla. 33308

Filed Aug. 26, 1982, Ser. No. 411,855

Int. Cl.³ H01H *61/02*

U.S. Cl. 337—100 **7 Claims**

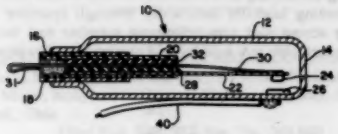
1. A motor protector comprising a case having an initially open end and a closed end,

a bimetal strip extending into said case as a cantilever, contact means on said case and strip for operative engagement,

a high resistance heater strip secured to the free end of said bimetal strip and extending out of the open end of said case,

insulation strips on both surfaces of said heater strip at the open end of said case,

a plastic insulation tape encompassing said bimetal strip, heater strips and insulation strips, and



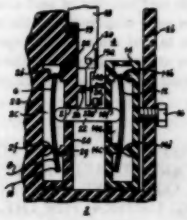
an insulation sleeve means encompassing said insulation tape and members therein and positioned at the initially open end of said case, which end has been sealed about said insulation sleeve means and the tape and strips therein.

4,486,733

THERMAL MECHANISM WITH AMBIENT COMPENSATING BIMETAL PROVIDING TRIP FORCE

Peter K. Moldovan, Cascade, and John C. Hohensee, Milwaukee, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 29, 1982, Ser. No. 428,503
Int. Cl.³ H01H 71/16
U.S. Cl. 337—101 **14 Claims**



1. In a thermal protective mechanism having trippable means operable in response to an overthermal condition for protecting a load device supplied from an energy source, the improvement comprising:

thermal responsive means;

means for tripping said trippable means;

means for preloading said thermal responsive means comprising:

bias means; for providing a force

and actuator means responsive to said force of said bias means for applying said preloading such that an over-thermal condition causes said thermal responsive means to relieve at least some of said preloading whereupon said bias means causes movement to said actuator means whereby said actuator means causes operation of said tripping means.

4,486,734

HIGH VOLTAGE ELECTRIC FUSE

John G. Leach, Hickory, N.C., assignor to General Electric Company, King of Prussia, Pa.

Filed Apr. 8, 1983, Ser. No. 483,391
Int. Cl.³ H01H 85/04
U.S. Cl. 337—162 **17 Claims**

1. A high voltage electric fuse comprising:

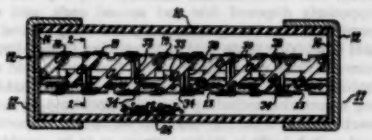
(a) a pair of spaced-apart conductive terminals,

(b) a fusible conductive element connected between said terminals,

(c) bodies of exothermic material disposed closely adjacent to said conductive element at spaced-apart locations along the length of the conductive element, the exothermic material of each body having the property of exothermically reacting when heated to a predetermined temperature,

(d) a triggering circuit connected between said terminals independently of said fusible conductive element and having a resistance that limits current therethrough to very low values until said fusible conductive element is disrupted,

(e) means for connecting the bodies of exothermic material in good heat-transfer relationship with said triggering circuit and said fusible conductive element so that the



heating effect of current through said triggering circuit upon disruption of said fusible conductive element causes the material of said bodies to exothermically react and thus cause further disruption of said fusible element at additional locations respectively located adjacent to said bodies,

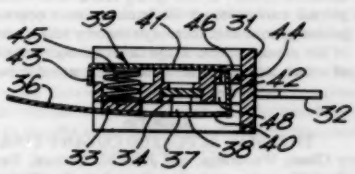
(f) and means for electrically insulating said triggering circuit from said fusible conductive element at all points along the length of said fusible element except at said terminals.

4,486,735

LATCH FOR A SNAP-ACTION SWITCH

Terence J. C. Foster, Buxton, England, assignor to Otter Controls Limited, Buxton, England

Continuation-in-part of Ser. No. 193,447, Oct. 3, 1980, Pat. No. 4,341,932. This application Jul. 26, 1982, Ser. No. 401,734
Claims priority, application United Kingdom, Nov. 26, 1981, 8135757
Int. Cl.³ H01H 37/74
U.S. Cl. 337—348 **13 Claims**



1. A thermally-responsive electric switch comprising:

a switch body formed from an electrically insulating material;

first and second switch terminals mounted in said switch body;

a fixed switch contact mounted in said switch body and electrically connected to said first switch terminal;

a snap-acting actuator comprised of stressed bi-metallic material, said actuator including a blade which is movable with snap-action between two configurations for changing the state of the switch contacts, said blade having a portion which is fixed relative to said switch body, said fixed portion being electrically connected to said second switch terminal, said actuator further having a portion which is movable relative to said switch body in response to temperature induced changes in the configuration of said blade;

a movable switch contact carried by said actuator movable portion, said movable contact being positioned and con-

figured to cooperate with said fixed switch contact whereby the configuration of said bi-metallic actuator blade will determine whether said switch contacts are in the open or closed state; and

latching means which, when the bi-metallic actuator blade has snapped from a first to a second configuration, restrains return movement of said movable portion thereof to the first configuration to thereby prevent resetting of the switch until said latching means is positively released, said latching means comprising a one-piece latch member of substantially rigid material received in said switch body, said latch member having a major portion with oppositely disposed first and second ends, said major portion at least partly over-lying and being spaced from said bi-metallic blade, said latch member further having a minor portion extending from the first end of said major portion toward said actuator movable portion, said latching means also including pivotal support means for said latch member whereby said latch member is supported on said switch body in such a manner as to be capable of a limited degree of pivotal movement, said pivotal support means extending from said first end of said latch member major portion, said latching means further comprising separate spring means, said spring means biasing the second end of said latch member major portion in a direction generally away from said blade, the arrangement of said latch member major and minor portions being such that said minor portion is biased by the action of said spring means upon said major portion into abutting relationship with an edge of said actuator movable portion when said actuator blade has a first configuration and the switch is in a first state, the latch member pivoting under the action of said spring means so as to cause the minor portion thereof to move generally toward the position occupied by said blade in its first configuration so as to place the free end of said minor portion in a position where return movement of said movable portion is prevented by said latching member minor portion free end upon said blade snapping to its second configuration whereupon the switch will be latched in its second state, unlatching of the switch to permit the actuator movable portion to return the movable switch contact to the first state being accomplished by applying a force to said major portion of said latch member in the region of said second end thereof in a direction counter to said spring bias so as to effect a bodily pivotal movement of the latch member opposite to the latching movement thereof to thereby rotate said free end of the minor portion of the latch member out of the path of return movement of the actuator movable portion.

4,486,736

THERMAL ACTUATED CUT-OFF LINK

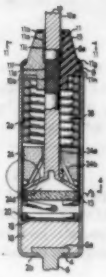
Harry Olson, Woodridge, and John M. Borzoni, Des Plaines, both of Ill., assignors to Littelfuse, Inc., Des Plaines, Ill.

Filed Nov. 26, 1982, Ser. No. 444,371

Int. Cl.³ H01H *37/76*

U.S. Cl. 337—409 **9 Claims**

9. In a thermally actuated cut-off link having a casing of electrically conductive material, closure means at each end of said casing, a first power lead exposed to the outside of said casing through an opening in one of said closure means through aperture means, said closure means formed by an insulating closure member, and casing-contacting arm means being at the inner end of said first power lead and making a low-resistance contact with an inner conductive surface of said casing, a second exposed power lead exposed through the other closure means and making a permanent low resistance connection with said casing, said first power lead, said casing, and said second power lead completing an electrical flow path, a sandwich of elements held under spring pressure between spaced points in said casing including stressed spring means, an arm-deforming member urged by said spring means toward said arm means when said stressed spring means is freed to move toward an unstressed state, a backing member proximate said arm-deforming member, and a fusible body which melts at a given control temperature, said first power lead passing through an axial opening in said arm-deforming member with said casing-contacting arm means on the end of said first power lead extending laterally outwardly through aperture means extending across said arm-deforming member and being inwardly deformable and held by said closure member in pressed



relation against said backing member which expands said arm means in said aperture means against said casing, said arm-deforming member deforming said arm members inwardly to break contact with said interior of said casing and thereby to interrupt said flow path responsive to the melting of said fusible body and the lateral ends of said aperture means being beveled to increase air space proximate the contact of said arm means with the inner conductive surface of the casing.

4,486,737

ELECTRIC RESISTOR WHICH HAS LOW RESISTANCE AND SERVES PARTICULARLY FOR PROTECTING AN ELECTRIC CONSUMER AGAINST ELECTRIC OVERLOAD, AND METHOD FOR THE MANUFACTURE THEREOF

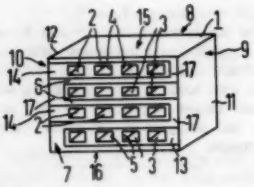
Günter Ott, Schwanberg, Austria, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 4, 1983, Ser. No. 463,912

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1982, 3204207

Int. Cl.³ H01C *1/14, 7/02*

U.S. Cl. 338—22 R **10 Claims**



1. Electric resistor, comprising a PTC body being formed of ceramic material and having opposite poles, two opposite outer side surfaces being parallel to the longitudinal axis of said PTC body and two opposite end faces perpendicular to said outer side surfaces, said PTC body having rows of mutually parallel depressions formed in said end faces defining inner surfaces and leaving partitions therebetween, metal coatings disposed on said inner surfaces at said opposite poles and partitions, metal layers disposed on said outer side surfaces, and metal strips being disposed on said end faces interleaved in comb-fashion and being connected to said metal coatings and to said metal layers, defining current flow paths from said metal layers and metal strips through said partitions being

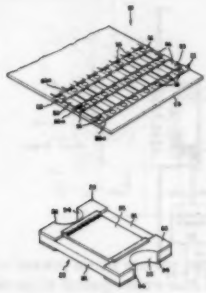
perpendicular to the longitudinal axes of said depressions and electrically connecting said pole coatings of a respective row of depressions to each other.

4,486,738

HIGH RELIABILITY ELECTRICAL COMPONENTS

James L. Sadlo, Oakdale, and Gary D. Musil, Minneapolis, both of Minn., assignors to General Electric Ceramics, Inc., Cleveland, Ohio

Filed Feb. 16, 1982, Ser. No. 349,080
Int. Cl.³ H01C *1/01*
U.S. Cl. 338—320 **3 Claims**



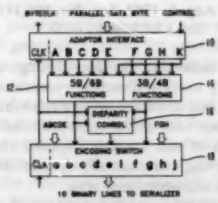
1. An array of electrically interconnected spaced electrical circuit components comprising a substrate of electrically insulating material having upper and lower planar surfaces, a plurality of through apertures aligned in at least two parallel rows, both said rows and apertures being spaced apart from each other in said substrate, a continuous conductive ink strip surrounding each aperture and aligned with the aperture row on said upper and lower surfaces of said substrate, a conductive ink strip lining the wall of each aperture and being electrically interconnected to the conductive ink strip surrounding each said aperture and a plurality of electrical circuit components on said upper surface of said substrate aligned in a transverse row each positioned between a pair of apertures and being electrically interconnected to the conductive ink strip surrounding said pair of apertures.

4,486,739

BYTE ORIENTED DC BALANCED (0,4) 8B/10B PARTITIONED BLOCK TRANSMISSION CODE

Peter A. Franaszek, and Albert X. Widmer, both of Katonah, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1982, Ser. No. 394,045
Int. Cl.³ H03K *13/00*
U.S. Cl. 340—347 DD **20 Claims**



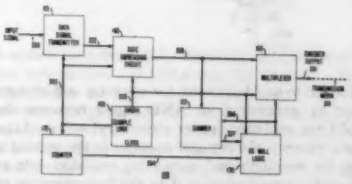
1. A method for producing a DC balanced (0,4) run length limited rate 8B/10B code from an unconstrained input data stream comprising a multiplicity of 8 bit data blocks, said method including partitioning the 8 bit block into two sub-blocks consisting of 5 and 3 contiguous bits, examining each sub-block to determine if any of the individual bits require alteration and altering predetermined bits based on said determination to produce an alternate code pattern, determining the disparity (D0) of the current output sub-block being coded, ascertaining the disparity (D-1) of the last non-zero sub-block coded and selecting a first code pattern as the current output sub-block for certain of the output sub-blocks if the last non-zero disparity in the output code pattern was of a first polarity, assigning the complement of said first code pattern if the last non-zero disparity was of the opposite polarity.

4,486,740

DC CANCELLATION IN TERNARY-CODED DATA SYSTEMS

Harold Seidel, Warren, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 6, 1982, Ser. No. 447,492
Int. Cl.³ H03K *13/00*
U.S. Cl. 340—347 DD **5 Claims**



4. A digital encoder for producing a ternary coded output signal from an input signal, said output signal having a suppressed direct current component, comprising

means responsive to said input signal for generating a ternary coded data stream of symbols having positive, negative and null values,

means receiving said ternary coded data stream and increasing its data rate,

means for determining the relative number of positive and negative symbol values in said data stream over a predetermined time period,

means responsive to said relative number from the determining means for generating one or more compensating code symbols of positive or negative value, and

means for augmenting said ternary coded data stream of increased data rate by adding generated compensating code symbols at the end of each predetermined time period to thereby suppress said direct current component.

4,486,741

MANUAL DATA INPUT DEVICE FOR A NUMERICAL CONTROL APPARATUS

Ryoichiro Nozawa, Tokyo, and Nobuyuki Kiya, Hachioji, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Apr. 17, 1981, Ser. No. 255,256
Claims priority, application Japan, Apr. 30, 1980, 55-59598[U]
Int. Cl.³ G06F *3/02*
U.S. Cl. 340—365 R **7 Claims**

1. A data input device comprising:

a keyboard including a plurality of keys at least some of which are assigned both a letter of the alphabet and a numerical value, which keys are operable to generate key signals representing data that comprises a letter of the alphabet and numerical values immediately following said letter;

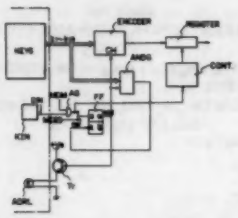
an encoder, operatively connected to said keyboard and having first and second modes, for encoding said key signals generated by the operated keys to generate encoded data representing one of said letter of the alphabet

and said numerical values in dependence upon the mode of said encoder;

a data input key for inputting said encoded data comprising the letter of the alphabet and numerical values;

a changeover circuit, operatively connected to said data input key and said encoder, which is set by said data input key, for placing said encoder in the first mode being for encoding the key signal and outputting encoded data representing a letter of the alphabet and for generating a set signal; and

a gate circuit, operatively connected to said changeover



circuit and to said keyboard, for resetting said changeover circuit by generating an AND signal between the set signal from said changeover circuit and a first of the key signals, thereby placing said encoder in the second mode being for encoding and outputting encoded data representing the numerical value data, the first operation of one of said keys causing said encoder to encode the key signal and output the encoded data representing the letter of the alphabet assigned to said key, and then to switch over to the second mode for encoding the key signal and outputting the encoded data representing the numerical value data generated by subsequent operation of said keys.

4,486,742

MULTIFREQUENCY PIEZOELECTRIC HORN SYSTEM

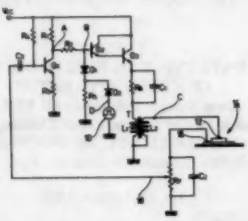
Michio Kudo; Tatsuo Fukami, and Rinpei Hayashibe, all of Naganoken, Japan, assignors to Marukokelhouki Co. Ltd., Naganoken, Japan

Filed Sep. 29, 1981, Ser. No. 306,830

Claims priority, application Japan, Nov. 10, 1980, 55-160581[U]; Nov. 10, 1980, 55-160582[U]; Jan. 30, 1981, 56-13086[U]

Int. Cl.³ G08B *3/00*

U.S. Cl. 340—384 E **10 Claims**



1. Multifrequency piezoelectric sound-generating apparatus comprising:

a piezoelectric vibrator for generating audible sound at at least first and second distinct resonance frequencies;

an oscillator circuit connected to said piezoelectric vibrator for oscillating at said first resonance frequency; and

a modulator circuit connected to said oscillator circuit for amplitude-modulating said oscillator circuit with a modulating frequency substantially equal or close to the frequency separation between said first and second resonance frequencies to energize said piezoelectric vibrator with frequency-modulated waves to generate multifrequency audible sound.

4,486,743

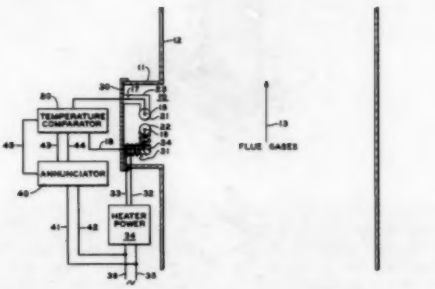
CREOSOTE BUILDUP DETECTOR AND ANNUNCIATOR

Peter K. Brown, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 5, 1932, Ser. No. 354,983

Int. Cl.³ G08B *21/00*; G01K *13/00*; G01N *25/00*

U.S. Cl. 340—584 **11 Claims**



1. A creosote buildup detector adapted to be mounted in a chimney to detect an unsafe buildup of creosote in said chimney and to annunciate that condition, including: temperature sensing means including first temperature sensor and heat generating means, and a second temperature sensor spaced apart from said first temperature sensor and heat generating means; mounting means including a pair of insulating mounting members with one each of said mounting members to mount said temperature sensor and heat generating means, and said second temperature sensor adjacent each other in said chimney; said heat generating means raising the temperature of said temperature sensors and heat generating means; temperature comparator means connected to said two temperature sensors to compare a relative temperature difference between said sensors caused by said heat generating means; and annunciator means connected to said comparator means to respond to an excess of a set level of temperature difference detected between said temperature sensors to indicate the unsafe buildup of creosote at said pair temperature sensors.

4,486,744

MAXIMUM AND MINIMUM GAS FLOW SENSOR

Richard L. Pratt, Shelburne, and Francis J. Thornton, Charlotte, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1982, Ser. No. 405,211

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—606 **9 Claims**

1. A device for indicating gas flow through a conduit oriented in a generally vertical direction comprising:

a first section of said conduit having a substantially cylindrical inner surface with a first cross-sectional area;

a second section of said conduit disposed above said first section and having a substantially cylindrical inner surface with a second cross-sectional area;

a third section of said conduit connecting said first and second sections;

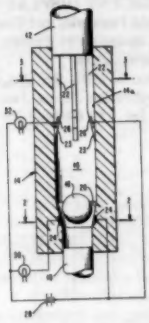
a ball disposed in said conduit and movable vertically responsive to the gas flow;

said third section of said conduit forming lower seating means for seating said ball when there is no gas flowing;

upper seating means in said second section, spaced from the third section and arranged to engage said ball;

circuit means including first electrical means in said third section and second electrical means at said upper seating means adapted to provide an electrical signal responsive to the co-action of said electrical means and the ball;

the internal cross-sectional area of the second section being sufficiently large, to compensate for the gas flow blocked



by the upper seating means and the ball when said ball is seated in the upper seating means such that the cross-sectional area of the second section is at least equal to the sum of the cross-sectional areas of said first section, said upper seating means and said ball;

whereby an electrical signal is provided responsive to a given flow, and gas flow is not substantially restricted when the ball is engaging the upper seating means, thereby minimizing back pressure.

4,486,745

PATTERN GENERATING APPARATUS CAPABLE OF GENERATING PATTERNS BY CONTROLLING BASIC SYMBOLS

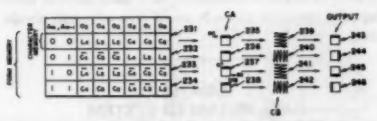
Akira Konno, Sayama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1981, Ser. No. 306,361

Claims priority, application Japan, Oct. 3, 1980, 55-138327

Int. Cl.³ G09G 1/16

U.S. Cl. 340—734 **28 Claims**



1. A pattern generating apparatus, comprising:

form symbol generating means for providing a plurality of basic form symbols and for generating form symbols therefrom;

access means for controlling access of said generating means to generate form symbols different from said plurality of basic form symbols but based on said plurality of basic form symbols; and

entry means for entering a select signal for selecting the form symbol to be generated by said generating means, said access means selecting one of said plurality of basic form symbols in response to said select signal and then selecting the read-out sequence of said one basic form symbol thereby to determine the form symbol generated by said generating means.

4,486,746

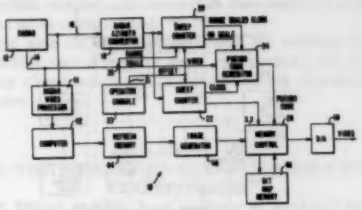
DIGITAL SYSTEM FOR RASTER SCAN DISPLAY OF VIDEO AND ALPHA-NUMERICS WITH SINGLE BIT MAP MEMORY

Donald F. Walker, Anaheim, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Nov. 24, 1981, Ser. No. 324,518

Int. Cl.³ G09G 1/00

U.S. Cl. 340—750 **9 Claims**



1. A system for substantially simultaneous raster scan display of video information and alpha-numeric data on a single display comprising:

first means for providing first and second electrical signals representing the location and spatial intensity distribution of a video signal respectively;

second means for encoding said second electrical signals by assigning first specified bit patterns from a first predetermined set to said second electrical signals;

third means for generating third and fourth electrical signals representing the location and spatial intensity distribution of alpha-numeric data, said fourth electrical signals being encoded with second specified bit patterns from a second predetermined set;

first memory for storing said encoded second and fourth signals at addresses determined by said first and third signals respectively; and

fourth means for sequentially reading out encoded information from said first memory including means for detecting said first and second specified bit patterns and controlling a display presentation responsive thereto whereby the spatial intensity distributions represented by said first and second specified bit patterns are visually differentiated on a display.

4,486,747

GAS DISCHARGE DISPLAY APPARATUS CAPABLE OF EMPHASIS DISPLAY

Yukio Okamoto, Sagamihara; Shinichi Shinada, Kokubunji; Tadao Okabe, Hachioji; Kazuhito Ikarashi, Niigata, and Osamu Igarashi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 15, 1981, Ser. No. 311,764

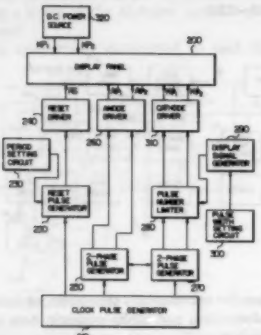
Claims priority, application Japan, Oct. 20, 1980, 55/148540[U]

Int. Cl.³ G09G 3/00

U.S. Cl. 340—753 **17 Claims**

1. A gas discharge display apparatus, capable of emphasis display, comprising a plurality of first electrodes disposed in a row and wired in polyphase connection, and plurality of second electrodes wired in polyphase connection and interposed between and spaced from said first electrodes so that said first and second electrodes are disposed in the row when viewed in a predetermined direction, first voltage applying means for applying successively first pulse voltages having a value which is one of a greater and lesser value than a predetermined reference value to common leads to said first electrodes, and second voltage applying means for applying successively second pulse voltages having a value which is the other of the greater and lesser value than the predetermined reference value to com-

mon leads to said second electrodes so that a self-scanning discharge is produced between said first and second electrodes by said first and second pulse voltages, wherein the apparatus further comprises discharge stabilizing resistors connected to the common leads to either one of said pluralities of first and second electrodes, and means for controlling the pulse width of said second pulse voltage pulses to intensify illumination due



to the discharge between specified first and second electrodes at an end portion of the self-scanning in response to an input signal to be displayed, whereby said discharge is sustained between said selected ones of said first and second electrodes by said discharge stabilizing resistors which causes the voltage between said first and second electrodes to lie between a discharge starting voltage and a minimum discharge maintenance voltage.

4,486,748

SEGMENTED TYPE LIQUID CRYSTAL DISPLAY AND DRIVING METHOD THEREOF

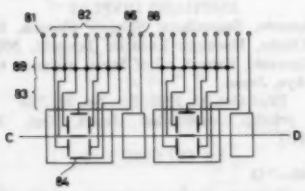
Keisaku Nonomura, Nara; Masataka Matsuura, Tenri; Hisashi Uede, Wakayama; Kohhei Kishi, Nara, and Hiroaki Kato, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 172,175, Jul. 25, 1980, Pat. No. 4,385,292. This application Sep. 16, 1982, Ser. No. 419,015

Claims priority, application Japan, Jul. 30, 1979, 54-97912; Jul. 31, 1979, 54-98369; Jul. 31, 1979, 54-98367

Int. Cl.³ G09G *3/04*

U.S. Cl. 340—756 **9 Claims**



1. A segmented type display for displaying a plurality of characters comprising:

display segment means for providing a visual display pattern;

counter electrode means provided opposite said display segment means for communicating therewith;

first substrate means for carrying a portion of said display segment means associated with some of said plurality of characters and a portion of said counter electrode means associated with others of said plurality of characters;

second substrate means for carrying remaining portions of said display segment means and said counter electrode means; and

a display medium provided between said first and second substrate means for producing a visual display upon energization of opposed display segment means and counter electrode means.

4,486,749

FLUORESCENT DISPLAY DEVICE

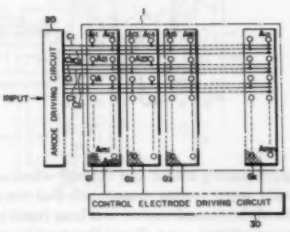
Takao Kishino; Tadashi Funazaki, and Toshihiro Yamaguchi, all of Mobara, Japan, assignors to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan

Filed Jun. 3, 1982, Ser. No. 384,481

Claims priority, application Japan, Jun. 8, 1981, 56-86785

Int. Cl.³ G09G *3/28*

U.S. Cl. 340—772 **3 Claims**



1. A fluorescent display device for displaying characters, graphic forms and the like, comprising:

cathode means for emitting electrons;

means for selectively impinging said emitted electrons upon a plurality of phosper-coated anodes wherein said anodes are arranged in the form of a matrix of rows and columns wherein said phosphor-coated anodes on each of said rows are divided into a number of anode groups, each row containing a first group of anodes electrically connected in common whose column position is defined by the progression of (3N−2), N being a positive integer increasing in value from 1 to the value which represents the number of anode groups, a second group of anodes electrically connected in common whose column position is defined by the progression of (3N−1), and a third group of anodes electrically connected in common whose column position is defined by the progression of (3N):

a plurality of control electrodes with each control electrode disposed opposite to each set of two adjacent anode columns.

4,486,750

DATA TRANSFER SYSTEM

Tetsuo Aoki, Kohnosu, Japan, assignor to Takeda Riken Co. Ltd., Tokyo, Japan

Filed May 14, 1982, Ser. No. 378,267

Claims priority, application Japan, May 18, 1981, 56-74624

Int. Cl.³ H04Q *9/00*

U.S. Cl. 340—825 **23 Claims**

1. A data transfer system in which a control side equipment and at least one equipment under control are interconnected via data line means and a strobe line,

the control side equipment including

data setting means for setting data on the data line means,

strobe pulse send-out means for sending out a strobe pulse on the strobe line, and

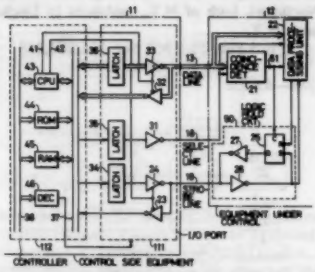
strobe line monitoring means for detecting the logic state of the strobe line and

said at least one equipment under control including

data fetch means for fetching data from the data line means,

strobe line logic detecting means for detecting the logic state of the strobe line,

logic hold means for holding the strobe line in the logic state of the strobe pulse when the strobe pulse is provided on the strobe line from the control side equipment, and



hold releasing means for releasing the logic hold means,

wherein said data is transferred asynchronously between said control side equipment and said at least one equipment under control in response to said control side equipment detecting said holding of the logic state of the strobe line, and after said fetching of said data, said holding of said logic state of the strobe line is released by said releasing means.

4,486,751

ELECTRONIC IDENTIFICATION SYSTEM

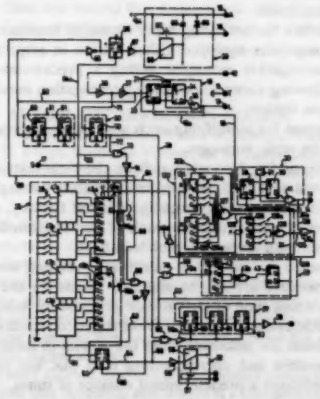
Alain M. Mole, 138, Ave. Ambroise Croizat, 38400 Saint Martin d'Heres, and Jean-Louis P. J. Savoyet, La Mayrie, 38770 La Motte d'Aveillans, both of France

Filed May 12, 1982, Ser. No. 377,315

Claims priority, application France, May 12, 1981, 81 09452

Int. Cl.³ E05B *49/00*; H04Q *3/00*; G07F *7/08*

U.S. Cl. 340—825.31 **15 Claims**



1. An electronic identification system comprising:

a moveable part having a preprogrammed passive memory array containing an electronic identification code, and a readible memory connected to said passive memory array and having its output fed back to its input, and

a fixed part capable of being coupled with the moveable part and comprising electric power supply means for supplying electric power, electronic means for supplying a pulse to said moveable part thereby causing the electronic identification code to be loaded into the readible memory of the said moveable part, a fixed part memory, said electronic means for reading the contents of the readible memory of the moveable part and transferring them into said fixed part memory and comparison means for comparison with a code preprogrammed into the said fixed part,

wherein said electronic means transmits, before the reading operation, a set number of preliminary clock pulses, which is different from a multiple of the number of bits in the said readible memory and which each time leads to a permutation of its contents, and

a logic gate for enabling transfer of the contents of said readible memory to the fixed part memory for reading only after transmission of the set number of preliminary pulses.

4,486,752

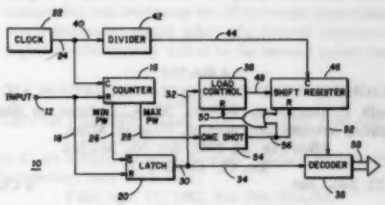
PULSE WIDTH DISCRIMINATOR APPLICABLE TO ATC TRANSPONDERS

Paul P. Chihak, Atkins, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 29, 1982, Ser. No. 362,699

Int. Cl.³ H03K *5/22*; H04Q *9/00*

U.S. Cl. 340—825.63 **10 Claims**



1. A pulse discriminating apparatus comprising:

means for receiving an input pulse and providing a first signal when said input pulse width exceeds a predetermined minimum time period and providing a second signal when said input pulse width exceeds a predetermined maximum time period; and

timing means responsive to said input pulse and said first signal for providing a timing signal output when said input pulse width exceeds said predetermined minimum time period and responsive to said second signal for discarding said timing signal and preventing a timing signal output when said input pulse width exceeds said predetermined maximum time period, said timing means providing said timing signal output only when said input pulse width falls in a range between said minimum and said maximum predetermined time periods.

4,486,753

BUS LINE DRIVE CIRCUIT

Yukihiro Saeki, and Kazuyuki Uchida, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 16, 1982, Ser. No. 398,892

Claims priority, application Japan, Aug. 21, 1981, 56-131002

Int. Cl.³ H04Q *9/00*; H03K *5/08*

U.S. Cl. 340—825.91 **6 Claims**

1. A bus line drive circuit comprising:

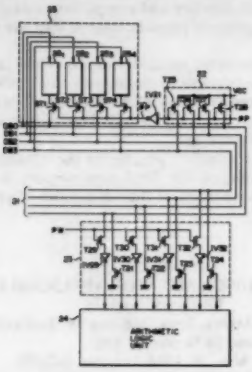
a bus line allowing data to transfer therethrough;

a precharge circuit connected to said bus line for precharging said bus line with precharge pulse;

input/output circuit connected to said bus line for transferring data to and from a circuit through said bus line; and

a positive feedback circuit connected to said bus line, which

exhibits a high impedance during a precharge period to electrically be disconnected from said bus line, keeps a precharge potential when the potential on said bus line is



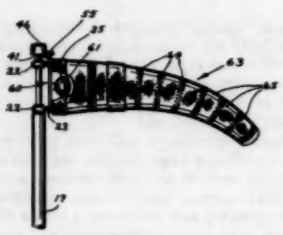
equal to the precharge potential during an active period, and expands a potential difference when the potential on said bus line is slightly different from the precharge potential.

4,486,754

LIGHTED WIND CONE FOR EVACUATION AID

Kenneth F. Guggemos, Buffalo, Minn., assignor to Sterner Lighting Systems Incorporated, Winsted, Minn.

Filed Jan. 25, 1982, Ser. No. 342,232
Int. Cl.³ G08G 5/00
U.S. Cl. 340—949 **6 Claims**



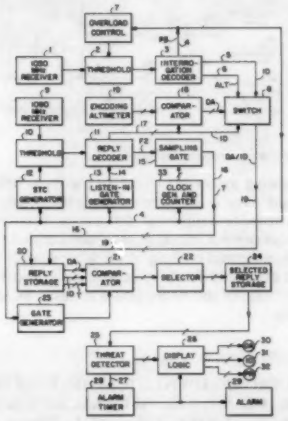
1. An emergency evacuation device for indicating wind direction for evacuation air vehicles comprising a support kpost, a wind cone assembly having a mounting end with a perimeter defining an opening leading to an interior space within the wind cone assembly and being rotatably mounted on said support post, an illumination source comprising a lamp assembly, means to mount said lamp assembly for rotation with said wind cone assembly relative to said post, said slip ring means including a rotatable portion carried with said wind cone assembly and lamp assembly and a stationary portion mounted on said post for transmitting electrical power from the stationary post to said lamp assembly, said lamp assembly comprising a lamp holder mounted adjacent the mounting end of said wind cone assembly, a lamp mounted on said lamp holder, said lamp being positioned within the perimeter of said wind cone assembly and directing light into the interior of said wind cone assembly, said wind cone assembly including a wind cone sleeve having alternating portions of first and second different light transmitting properties to provide a pattern of alternating lighter and darker portions when the lamp is powered.

4,486,755

COLLISION AVOIDANCE SYSTEM

Burton L. Hulland, Glenwood Landing, and George B. Litchford, Northport, both of N.Y., assignors to Litchstreet Co., Northport, N.Y.

Filed Feb. 22, 1982, Ser. No. 351,275
Int. Cl.³ G01S 13/78
U.S. Cl. 343—6.5 LC **34 Claims**



1. A collision avoidance system at an Own station, including:

(a) means for receiving interrogation messages transmitted by each SSR within operational range of said Own station when said Own station is within the main beam of an SSR and also when said Own station is within a side lobe of said main beam,

(b) means for receiving reply messages transmitted by any transponder-equipped Other station in response to such interrogation messages during a predetermined period following reception of each interrogation message at said Own station,

(c) means for identifying each said Other station according to its reply messages,

(d) means for determining, from the time relationships between each said received interrogation message and each said received reply message elicited thereby, differential time of arrival data for each of said identified Other stations with respect to each said SSR,

(e) means for storing as entries in a running account each successive identity obtained by means (c) and the corresponding time of arrival data obtained by means (d) for a predetermined number of interrogation repetition periods,

(f) means for matching from the entries in means (e) those identities and corresponding data that are substantially duplicated a predetermined number of times,

(g) means for storing the entry for each such matched identity and corresponding data for a storage period at least as long as the longest SSR beam rotation period,

(h) means for selecting the largest differential time of arrival related to each said identified Other station stored in means (g), and

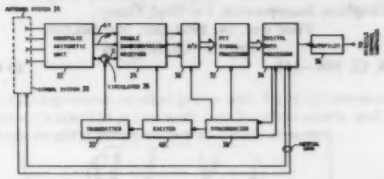
(i) means for producing a threat alert in response to any such selected differential time of arrival below a predetermined value.

4,486,756

METHOD OF REDUCING ANGLE NOISE IN A RADAR

Theodore J. Peregrim, Bedford; Irving Kanter, Lexington, and Rosario Mangiapane, Burlington, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 4, 1981, Ser. No. 329,556
Int. Cl.³ G01S 13/00
U.S. Cl. 343—16 M 3 Claims



1. In a monopulse radar, operating through a radome having a known tuning frequency to illuminate an extended complex target so that return signals may be subjected to glint, a method of reducing boresight errors due to the effect of the radome and antenna on return signals from such target and the shape and aspect of such target, such method comprising the steps of:

(a) transmitting pairs of interrogating signals, the frequencies of such signals being equally spaced above and below the tuning frequency of the radome;

(b) for each return signal, forming monopulse sum and difference signals and converting such signals to corresponding complex digital signals having a real and an imaginary part;

(c) calculating, from the corresponding complex digital signals, the complex monopulse ratio for each return signal;

(d) comparing the magnitude of the complex digital signal corresponding to the monopulse sum signal to a first threshold signal and the magnitude of the imaginary part of the complex monopulse ratio to a second threshold signal; and

(e) when the magnitude of the monopulse sum signal is greater than the first threshold signal and when the magnitude of the imaginary part of the complex monopulse ratio is less than the second threshold signal, utilizing the real part of the complex monopulse ratio as a signal to be tracked.

4,486,757

AUTOMATIC DIRECTION FINDER

Rabindra N. Ghose, Los Angeles; Walter A. Sauter, Malibu, and William L. Foley, Westlake Village, all of Calif., assignors to American Nucleonics Corp., Westlake Village, Calif.

Filed Oct. 26, 1981, Ser. No. 314,521
Int. Cl.³ G01S 5/02
U.S. Cl. 343—417 11 Claims

1. An automatic direction finder for precise location of a source of electromagnetic signals comprising:

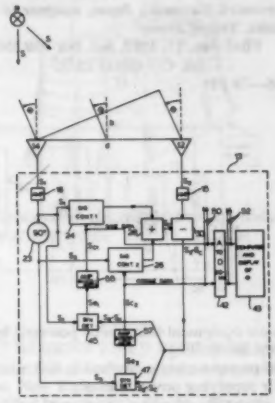
a first sensor means for receiving a first representation signal from an electromagnetic signal source; a second sensor means separately located from the first sensor means for receiving a second representation signal from the electromagnetic signal source;

the separately located first and second sensor means defining a baseline and boresight line which is a line perpendicular to the baseline and equidistant from the first and second sensor means;

an error correction means for producing a signal of equal amplitude and opposite phase from the second representation signal at the second sensor means;

said error correction means connected to the first and second sensor means for nulling the second representation signal at the second sensor means;

said error correcting means including means for deriving a control signal from the signal representation received by said first sensor means which constitutes a signal of equal amplitude and opposite phase from said second representation signal; and



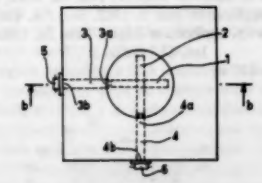
indicator means responsive to the error correction means for computing and displaying an off-boresight direction of the electromagnetic signal when the second representation signal is substantially nulled at the second sensor means.

4,486,758

ANTENNA ELEMENT FOR CIRCULARLY POLARIZED HIGH-FREQUENCY SIGNALS

Frans C. de Ronde, Lesigny, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 27, 1982, Ser. No. 372,365
Claims priority, application France, May 4, 1981, 81 08780
Int. Cl.³ H01Q 1/38
U.S. Cl. 343—700 MS 15 Claims



1. An antenna element for coupling circularly-polarized radiation to a feedline, said element comprising:

(a) first and second superposed planar dielectric layers;

(b) first and second conductive layers on outer surfaces of the first and second dielectric layers, respectively, at least one of said conductive layers having therein an opening exposing a portion of the outer surface of the respective dielectric layer and defining a cavity in the antenna element;

(c) first and second orthogonally-crossed conductive strip dipoles disposed between the dielectric layers under the exposed portion of the outer surface, said dipoles being electrically insulated from each other and each having a length approximately equal to one-half of the wavelength of radiation to be coupled thereby; and

(d) first and second conductive strips disposed between the dielectric layers and being longitudinally aligned with the first and second dipoles, respectively, each of said conduc-

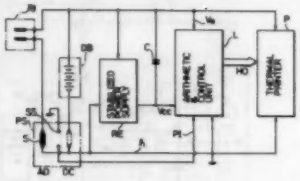
tive strips having one end coupled to its respective dipole and having another end coupled to the feedline.

4,486,759

ELECTRONIC EQUIPMENT

Shigeru Toyomura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1982, Ser. No. 389,556
Int. Cl.³ G01D 15/10
U.S. Cl. 346—76 PH 7 Claims



7. Electronic equipment that can be powered by an external power supply, comprising:

an internal power supply contained in said electronic equipment for supplying power thereto;

coupling means for coupling an external power supply for supplying power to said electronic equipment;

switching means for selecting one of said internal power supply and an external power supply coupled to said coupling means to supply power to said electronic equipment; and

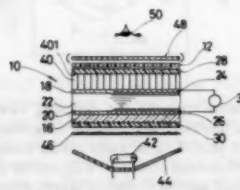
inhibit means responsive to switching of said switching means for inhibiting at least one function of said electronic equipment, said inhibit means including timer means for stopping inhibiting of said function a predetermined time period after the switching of said switching means.

4,486,760

LIQUID CRYSTAL DISPLAY/RECORD CELL

Fumiaki Funada, Yamatokoriyama; Masataka Matsuura, Tenri, and Tomio Wada, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 236,518, Feb. 20, 1981, abandoned.
This application Jan. 3, 1983, Ser. No. 455,272
Claims priority, application Japan, Feb. 21, 1980, 55-21464
Int. Cl.³ G02B 5/17
U.S. Cl. 346—107 R 3 Claims



1. A liquid crystal display and record system comprising:

first and second opposing substrates, said first substrate including a plurality of optical fibers, the axes of which are perpendicular to the plane of said first substrate;

liquid crystal material sandwiched between said first and second opposing substrates;

a first polarizer substantially juxtaposed to and above said first substrate;

a second polarizer disposed below said second substrate;

a photosensitive recording member substantially juxtaposed to said first polarizer; and

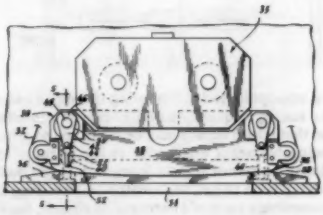
a shutter means disposed above said photosensitive recording member, said shutter means and said photosensitive recording member both being removably secured to the liquid crystal display and record system.

4,486,761

PARTICLE BEAM RECORDER SYSTEM HAVING A REFERENCING MEANS FOR ESTABLISHING REGISTRATION HOLES IN A FILM SUBSTRATE

Andrew A. Tarnowski, New Caanan, Conn., assignor to Image Graphics, Incorporated, Fairfield, Conn.

Filed Jun. 14, 1982, Ser. No. 388,085
Int. Cl.³ G01D 15/06
U.S. Cl. 346—161 10 Claims



1. In a charged particle beam recorder system having a controllable beam source of charged particles, a film gate for disposition of a film in predetermined relation therewith, and a curved platen which is convex in relation to said beam source, said film gate further comprising reference means for creating at least two reference holes of different shapes in a film disposed in said film gate, said holes for permitting said film after expansion, development and handling to be accurately positioned for display.

4,486,762

SELF-CONTAINED TYPE PRESSURE SENSITIVE RECORD SHEET

Shigeo Okamoto, Suita, and Tomoharu Shiozaki, Amagasaki, both of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,626
Claims priority, application Japan, Nov. 30, 1981, 56-193104
Int. Cl.³ B41M 5/16
U.S. Cl. 346—207 2 Claims

1. A self-contained type pressure sensitive record sheet prepared by coating a substrate with a mixture of a color acceptor and microcapsules containing a color former in the form of a single layer and drying the resulting coating, the mixture containing 40 to 200 parts by weight, per 100 parts by weight of the microcapsules calculated as solids, of a pulp powder having a weight average fiber length (TAPPI standard T232, SU-68) of 20 to 80μ.

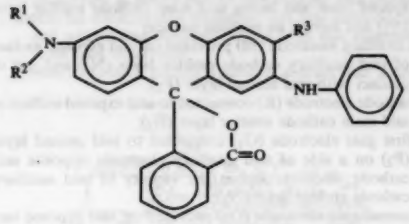
4,486,763

THERMOSENSITIVE RECORDING MATERIAL

Keishi Taniguchi; Susumu Iwata, both of Sunto, and Hiroshi Sakamoto, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

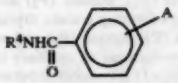
Filed Dec. 1, 1982, Ser. No. 446,086
Claims priority, application Japan, Dec. 9, 1981, 56-197923
Int. Cl.³ B41M 5/18
U.S. Cl. 346—209 7 Claims

1. A thermosensitive recording material comprising a support member and a thermosensitive layer formed on said support member, said thermosensitive layer comprising a fluoran compound of the formula (I), an acidic material capable of coloring said fluoran compound upon application of heat thereto, and a benzamide compound of the formula (II)



(I)

wherein R^1 represents an alkyl group with 5 to 8 carbon atoms, R^2 represents an alkyl group with 1 or 8 carbon atoms, and R^3 represents an alkyl group with 1 to 2 carbon atoms;



(II)

wherein R^4 represents an alkyl group with 10 to 30 carbon atoms, and A represents hydrogen or $—COOR^5$ in which R^5 represents an alkyl group with 1 to 10 carbon atoms.

4,486,764

PLAIN PAPER TRANSFER TYPE PRESSURE-SENSITIVE COPYING PAPER

Toshihiko Matsushita, Funabashi; Sadao Morishita, Ibaraki, and Shigetoshi Hiraishi, Tokyo, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Continuation of Ser. No. 287,121, Jul. 27, 1981, abandoned. This application Nov. 22, 1983, Ser. No. 554,173

Claims priority, application Japan, Aug. 1, 1980, 55/106051; Nov. 22, 1980, 55/165062; Nov. 22, 1980, 55/165064

Int. Cl.³ B41M *5/16*

U.S. Cl. 346—209 **1 Claim**

1. In a plain paper transfer type pressure-sensitive copying paper comprising (A) a coated paper obtained by coating on the surface of a support an aqueous coating color comprising (1) a colorless electron-donating color-forming agent , (2) a colorless electron-accepting color-developing agent capable of reacting with said color-forming agent to yield a colored product, one or both of the color-forming agent and the color-developing agent being micro-encapsulated, and (3) a wax and (B) a plain paper facing with the coated surface of the coated paper; the improvement comprising the said aqueous coating color also containing a surfactant in an amount of 3–15% by weight based on the solid content of said coating color and a styrene-butadiene copolymer as a water-soluble polymer and-/or latex in an amount of 5–30% by weight based on the solid content of said coating color.

4,486,765

AVALANCHE PHOTODETECTOR INCLUDING MEANS FOR SEPARATING ELECTRONS AND HOLES

Federico Capasso, Westfield, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 328,385, Dec. 7, 1981, abandoned. This application Jun. 18, 1982, Ser. No. 389,908

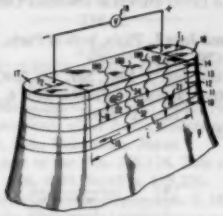
Int. Cl.³ H01L *29/90*

U.S. Cl. 357—13 **17 Claims**

1. In a semiconductor avalanche device for detecting radiation, a monocrystalline semiconductor body comprising:

a relatively narrow bandgap semiconductor layer of a first conductivity type in which avalanche multiplication of charge carriers generated by the absorption of radiation to be detected takes place;

a pair of wider bandgap semiconductor layers of a conductivity type opposite to said first conductivity type, said narrow bandgap layer being located between and contiguous with said wider bandgap layers; and



means for applying an electric field to said body parallel to the plane of said layers.

4,486,766

SCHOTTKY BARRIER FIELD EFFECT TRANSISTORS

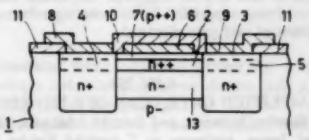
John M. Shannon, Whyteleafe, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 2, 1981, Ser. No. 326,467

Claims priority, application United Kingdom, Dec. 19, 1980, 8040795

Int. Cl.³ H01L *29/64*

U.S. Cl. 357—15 **14 Claims**



1. A Schottky barrier field effect transistor comprising:

a semiconductor body portion of a first conductivity type,

a gate region of a second conductivity type located at a surface of said semiconductor body portion between a source region and a drain region,

said gate region including a first semiconductor layer of said second conductivity type in contact with said semiconductor body portion, a second semiconductor layer of said second conductivity type arranged on and having a higher doping than said first semiconductor layer, and a metallic gate electrode extending over at least a part of said second semiconductor layer at said surface of said semiconductor body portion, said second semiconductor layer having a thickness sufficiently thin to support without breakdown an electric field in excess of a critical field for avalanche breakdown of said second semiconductor layer, said thickness being less than 100 nm, and said second semiconductor layer providing at least a part of a channel of the transistor, and

a third semiconductor layer of said first conductivity type lying between said second semiconductor layer and said gate electrode, said third semiconductor layer forming a surface-adjoining region being so shallow that it is substantially depleted of charge carriers in a zero gate bias condition, said surface-adjoining region having a thickness between 3 nm and 50 nm,

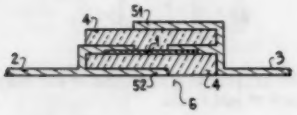
wherein a Schottky barrier is formed between said gate electrode and said semiconductor body portion, said barrier having an effective height raised by said third semiconductor layer.

4,486,767

BIPOLAR ELEMENT HAVING A NON-LINEAR CONDUCTIVITY CHARACTERISTIC, AND COMMUTATING DEVICE INCORPORATING THE SAME

Jean Fraleux, and Jean L. Ploix, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 3, 1981, Ser. No. 269,767
Claims priority, application France, Jun. 6, 1980, 80 12596
Int. Cl.³ H01L 29/78
U.S. Cl. 357—23 8 Claims



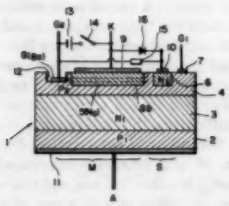
1. A bipolar element having a non-linear conductivity characteristic, constituted by a semiconductor body interposed between first and second isolating layers, a source electrode and a drain electrode connected on each side to said semiconductor body, and a double gate electrode comprising a first conductive part applied onto the first one of said isolating layers on the surface thereof which is opposed to the surface connected to said semiconductor body, said first gate electrode part being connected to said drain electrode, said double gate electrode further comprising a second conductive gate electrode part applied onto the second isolating layer on the surface thereof which is opposed to the surface connected to said semiconductor body, said second gate electrode part being connected to said source electrode, the entire assembly thus constituted being supported by an isolating substrate with the interposition of said gate electrode.

4,486,768

AMPLIFIED GATE TURN-OFF THYRISTOR

Tetsuro Sueoka, Numazu, and Satoshi Ishibashi, Higashimine, both of Japan, assignors to Kabushiki Kaisha Meidensha, Japan

Continuation of Ser. No. 295,484, Aug. 24, 1981, abandoned, which is a continuation of Ser. No. 105,306, Dec. 19, 1979, abandoned. This application Aug. 26, 1983, Ser. No. 526,796
Claims priority, application Japan, Jan. 12, 1979, 54-2364
Int. Cl.³ H01K 29/74
U.S. Cl. 357—38 5 Claims



1. A gate controlled semiconductor device comprising:
- a semiconductor bulk layer (N_1) of one conductivity type;
- a first semiconductor layer (P_1) of other conductivity type connected to one side of said bulk layer;
- a second semiconductor layer (P_2) of other conductivity type connected to an opposite side of said bulk layer and having an exposed surface;
- an anode electrode (A) connected to said first layer;
- a semiconductor main cathode emitter layer (N_2) of said one conductivity type disposed in said second layer (P_2) and having an exposed surface;
- a semiconductor auxiliary cathode emitter layer (N_3) of said one conductivity type disposed in said second layer (P_2), spaced from and facing said main cathode emitter layer (N_2) and having an exposed surface;
- an auxiliary electrode (10) provided on said exposed surface of said auxiliary cathode emitter layer (N_3) and out of contact with said second layer (P_2);
- a cathode electrode (K) connected to said exposed surface of said main cathode emitter layer (N_2);
- a first gate electrode (G_1) connected to said second layer (P_2) on a side of said auxiliary electrode opposite said cathode electrode and in the vicinity of said auxiliary cathode emitter layer (N_3);
- a second gate electrode (G_2) provided on said exposed surface of said second layer (P_2) on a side of said auxiliary electrode opposite said first gate electrode and so as to surround said main cathode emitter layer (N_2) except for a portion of said main cathode emitter layer facing said auxiliary cathode emitter layer (N_3);
- said bulk (N_1), first (P_1), second (P_2) and main cathode emitter (N_2) layers forming a main thyristor portion;
- said bulk (N_1), first (P_1) second (P_2) and auxiliary cathode emitter (N_3) layers forming an auxiliary thyristor portion;
- a biasing power source (13) connected between said cathode electrode (K) and said second gate electrode (G_2) for making a current flow from said biasing power source to said main cathode emitter layer (N_2), said second layer (P_2) and said second gate electrode (G_2) and for turning said main thyristor portion off;
- a diode (16) connected between said cathode electrode and said auxiliary electrode (10) for making a current flow from said biasing power source to said auxiliary cathode emitter layer (N_3), said second layer (P_2) and said second gate electrode (G_2) for simultaneously turning said main thyristor portion and said auxiliary thyristor portion off; and
- a resistor (15) provided between said second electrode (G_2) and said auxiliary electrode (10) for applying a reverse bias to said auxiliary thyristor portion during turning of said main thyristor portion on.

4,486,769

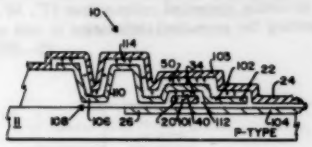
DENSE NONVOLATILE ELECTRICALLY-ALTERABLE MEMORY DEVICE WITH SUBSTRATE COUPLING ELECTRODE

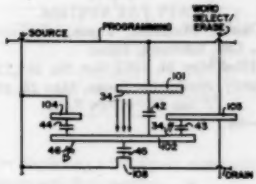
Richard T. Simko, Los Altos, Calif., assignor to XICOR, Inc., Milpitas, Calif.

Continuation-in-part of Ser. No. 6,030, Jan. 24, 1979, Pat. No. 4,274,012, said Ser. No. 6,026. This application Feb. 2, 1981, Ser. No. 230,683
Int. Cl.³ H01L 27/02, 29/78, 29/04; G11C 11/40
U.S. Cl. 357—41 7 Claims

1. A nonvolatile, electrically-alterable floating gate memory device comprising:
- a semiconductor substrate;
- a floating gate conductor;
- means for dielectrically insulating said floating gate conductor;
- means for detecting the electrical charge on said floating gate conductor;
- first electrode means intermediate said substrate and said floating gate conductor for introducing electrons onto said floating gate conductor, and including means for enhancing tunneling of charge across said insulating means from said first electrode means to said floating gate conductor;
- second electrode means overlying said floating gate conductor such that said floating gate conductor is intermediate said substrate and said second electrode means for removing electrons from said floating gate conductor, and including means for enhancing tunneling of charge across said insulating means from said floating gate conductor to said second electrode means;
- means for capacitively biasing said floating gate conductor

comprising a bias electrode formed in said substrate and underlying at least a part of said floating gate conductor;
means for dielectrically insulating said first electrode means and said second electrode means from said substrate and from each other; and
a sense transistor having a source, a drain and a channel





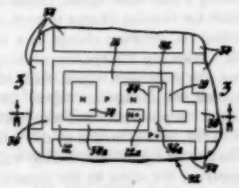
intermediate said source and said drain formed in said substrate, said channel including a first region whose conductivity is modulated by the electrical charge of said floating gate conductor, and at least one additional region positioned in a series relationship with said first region and said source and drain, whose conductivity is modulated by the present potential of said second electrode means.

4,486,770

ISOLATED INTEGRATED CIRCUIT TRANSISTOR WITH TRANSIENT PROTECTION

Gary K. Woodward, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 27, 1981, Ser. No. 257,509
Int. Cl.³ H01L 27/02, 29/72, 27/12, 27/04
U.S. Cl. 357—46 **4 Claims**



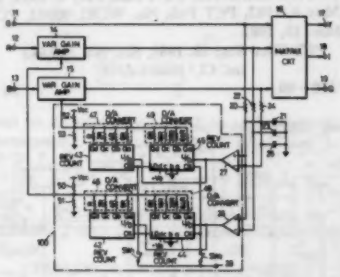
1. An integrated circuit having a plurality of isolation pockets and a bipolar transistor with integral base region reistor that includes compact protection against base-collector polarity reversal, comprising:
an integrated circuit chip having isolation walls defining a pocket of semi-conductive material;
an inward extension of said isolation walls that partially divides said pocket into parts;
emitter, base and collector regions of a bipolar transistor formed in one part of said pocket, said base region having an integral resistive portion that extends past said isolation wall extension into another part of said pocket;
a contract to said emitter region on said one pocket part;
a contact to said base region on said one pocket part;
a contact to said collector region on said one but not said other pocket part; and
a contact to said base region integral resistive portion on said another pocket part that is spaced from said collector region contact by said isolation all extension, effective to provide a protective resistance between the base region extension contact and the collector contact upon undesired polarity reversal therebetween.

4,486,771

AUTOMATIC WHITE ADJUSTING CIRCUIT FOR A TELEVISION CAMERA

Toyotaka Machida, Kashiwa; Teruaki Noda, Noda, and Yuichi Ikemura, Nagareyama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 269,126. This application Mar. 14, 1983, Ser. No. 475,216
Claims priority, application Japan, Feb. 6, 1980, 55-73856
The portion of the term of this patent subsequent to Apr. 26, 2000, has been disclaimed.
Int. Cl.³ H04N 9/535
U.S. Cl. 358—29 **8 Claims**



1. An automatic white adjusting circuit for a television camera having a color image pick-up device, said automatic white adjusting circuit comprising:
first variable gain amplifying means applied with a first primary color signal;
second variable gain amplifying means applied with a second primary color signal,
matrixing means applied with a third primary color signal and outputs of said first and second variable gain amplifying means;
first, second, and third low-pass filters respectively applied with the outputs of said first and second variable gain amplifying means and said third primary color signal;
first and second comparing means respectivey supplied with an output of said third low-pass filter to a single input terminal, and supplied with respective outputs of said first and second low-pass filters to their respective other input terminal;
first and third reversible counter means respectivel supplied with an output of said first comparing means to their respective up/down input terminals;
second and fourth reversible counter means respectively supplied with an output of said second comparing means to their respective up/down input terminals;
first, second, third and fourth digital-to-analog converters respectively supplied with parallel outputs of said first, second, third, and fourth reversible counter means;
first reference gain establishing means supplied with outputs of said first and third digital-to-analog converters;
second reference gain establishing means supplied with outputs of said second and fourth digital-to-analog converters; and
switching means for selectively switching over an incoming clock pulse, to supply said clock pulse to respective clock pulse input terminals of said first and second reversible counter means or said third and fourth reversible counter means,

said clock pulse input terminals of said first and second reversible counter means being respectively connected to load terminals of said third and fourth reversible counter means,

said first and second variable gain amplifying means respectively being supplied with gain varying control voltages from said first and second reference gain establishing means,

said matrixing means producing a luminance signal and two color difference signals.

4,486,772

METHOD AND CIRCUIT ARRANGEMENT FOR PARTIAL CORRECTION OF THE DELINEATION IN COLOR IMAGE REPRODUCTION

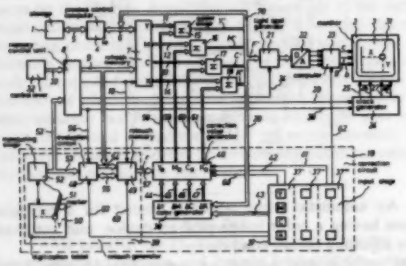
Jurgen Klie, Toekendorf, and Klaus Wellendorf, Kitzeberg, both of Fed. Rep. of Germany, assignors to Rudolf Hell GmbH, Fed. Rep. of Germany

PCT No. PCT/DE80/00133, § 371 Date May 4, 1982, § 102(e) Date May 4, 1982, PCT Pub. No. WO82/00902, PCT Pub. Date Mar. 18, 1982

PCT Filed Sep. 10, 1980, Ser. No. 380,662

Int. Cl.³ H04N 1/46

U.S. Cl. 358—80 **14 Claims**



1. The method for partial improving the delineation of color images by retouching, in which color values obtained by point-by-point and trichromatic scanning of color originals are digitized and the digital color values of the individual color separations are stored in a storage medium, and in which the stored color values are corrected by color correction values so as to obtain retouched color values, comprising the steps of:

(a) identifying the pairs of locus-coordinates of the image points to be retouched in the color image by marking the locationally allocated points in a coordinate identification device which is a digitizer with a marking means of said device, such as a coordinate pen cursor;

(b) generating locus-dependent color increments values (ΔY, ΔM, ΔC, ΔK) image point-wise for a color separation to be retouched in delineation from selectable portions of the color values (Y, M, C, K) of at least one other color separation which has a better delineation, said color increments values (ΔY, ΔM, ΔC, ΔK) representing smallest amount of correction for said color values (Y, M, C, K) per retouching step;

(c) during coordinate identification simultaneously determining the desired retouch strength of the delineation for each image point to be retouched by generating a retouch factor (r) for each identified pair of locus-coordinates with said marking means, guiding said marking means similar to a retouch brush over that area of the coordinate identification device which corresponds to the area of the color image to be retouched in delineation, said retouch factor (r) representing a plurality of color increment values (ΔY, ΔM, ΔC, ΔK) which are to be summed or to be subtracted to or from the color values (Y, M, C, K) at each image point which is to be retouched;

(d) generating correction values (Y_R, M_R, C_R, K_R) for each image point which is to be retouched by multiplying the retouch factor (r) with the individual color increment values (ΔY, ΔM, ΔC, ΔK); and

(e) correcting said color values (Y, M, C, K) of the image points which are to be retouched by adding or subtracting said corresponding correction values (Y_R, M_R, C_R, K_R) in order to obtain corrected color values (Y', M', C', K') representing the retouched delineation in said color image.

4,486,773

CATV PAY SYSTEM

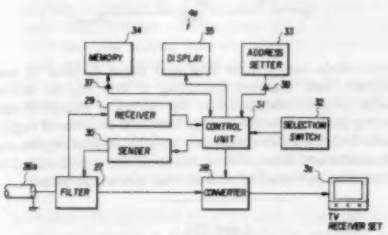
Kazutomo Okubo, Matsutoh, Japan, assignor to Hokuryo Denko Co., Ltd., Ishikawa, Japan

Filed May 24, 1982, Ser. No. 381,511

Claims priority, application Japan, May 28, 1981, 56-82395

Int. Cl.³ H04N 7/10

U.S. Cl. 358—84 **14 Claims**

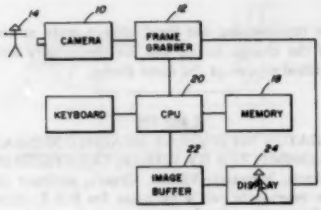


1. A two-way CATV system comprising a central equipment unit, a plurality of television receiver sets each disposed with a terminal unit and a wired two-way transmission line provided between the central equipment and each of the terminal units, in which said central equipment unit comprises means for generating a television signal, means for inputting a read out instruction for viewing charge to each of the terminal units and outputting the viewing charge in a visible form in accordance with a viewing charge signal supplied thereto, means for mixing the television signal from the generating means with the read out instruction signal for the viewing charge from an input/output means and means for transmitting the signal mixed in the mixing means to the transmission line and extracting the charge signal sent thereto via the transmission line and supplying the same to the input/output means, and wherein each of said terminal units comprises means for extracting the read out instruction signal for the viewing charge from the mixed signal supplied thereto via the transmission line and transmitting the viewing charge signal supplied thereto to the transmission line, selection means for selecting the television signal to be received by a corresponding television receiver set, means for measuring the time period during which a pay television program is selected by the selection means and calculating the viewing charge corresponding to the time period, memory means for storing the charge data signal calculated in the calculation means, means for reading out the viewing charge signal stored in the memory means and supplying the same to the extraction means when the read out for the viewing charge is demanded by the read out instruction signal for the viewing charge extracted in the extraction means, and means for sending the television signal that is selected by the selection means among the television signals supplied from the extraction means to the corresponding television receiver set in a receivable form.

4,486,774
SYSTEM AND METHOD FOR COMPOSITE DISPLAY

Laurence G. Maloomian, 28 Crystal Hill, Westwood, Mass. 02090

Continuation-in-part of Ser. No. 366,372. This application Feb. 16, 1983, Ser. No. 466,973
The portion of the term of this patent subsequent to Aug. 21, 2001, has been disclaimed.
Int. Cl.³ H04N 7/18
U.S. Cl. 358—93 7 Claims



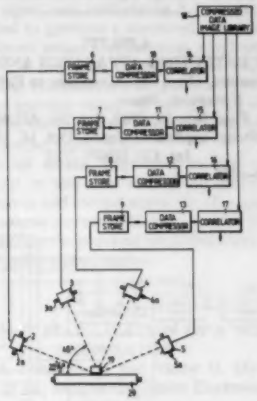
1. A system for displaying a full figure composite display of two separate images which comprises:
- means to record as a first image at least a portion of a customer's body;
- means to record as a second image at least a portion of clothing;
- means to store the second image;
- means to display at least a portion of the first image;
- means to determine if the stored image is proportional to the displayed portion of the first image;
- means to expand and/or shrink horizontally and/or vertically the second stored image by rasters;
- to vary the dimensions of the stored image and output the same, the dimensions varied based on the first image; and,
- means to display the stored image in combination with and contiguous to the displayed first image whereby a fully proportioned full figure composite is displayed.

4,486,775
OBJECT RECOGNITION

George W. Catlow, Newbury, England, assignor to Micro Consultants Limited, Berkshire, England

Filed Oct. 19, 1981, Ser. No. 313,009
Claims priority, application United Kingdom, Oct. 17, 1980, 8033538
Int. Cl.³ H04N 7/18
U.S. Cl. 358—106 9 Claims

1. An object recognition system comprising, means for effecting relative movement between an object and a viewing position, means for deriving image data representing a plurality of images of the object taken from different viewing directions which are angularly disposed about the direction of said relative movement, data compression means for compressing the derived image data representing the image taken from each said viewing direction, a source of image data arranged to provide image data representative of images of the object taken from a plurality of reference viewing directions which are angularly disposed about a reference line corresponding to the aforesaid direction of said relative movement, the angular separation of said reference viewing directions being small in relation to the angular separation of the first mentioned viewing directions, and correlation means for comparing the compressed image data with image data from said source to produce an indication of which image represented by said derived image data has the highest correlation with any one of said reference images, so that the orientation of the object can be

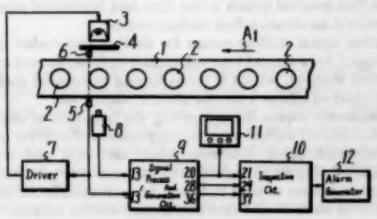


determined to an accuracy related to said relatively small angular separation.

4,486,776
INSPECTION APPARATUS

Hajime Yoshida, Tokyo, Japan, assignor to Hajime Industries, Ltd., Japan

Filed Jun. 9, 1982, Ser. No. 386,708
Claims priority, application Japan, Jun. 19, 1981, 56-95759
Int. Cl.³ H04N 7/18; G01P 3/40; G06K 9/32
U.S. Cl. 358—106 5 Claims



1. An object inspection system, comprising:
(a) position detecting means for detecting arrival of an object to be inspected at an inspection position and for generating a position detection signal at every time when said object arrives at the inspection position;
(b) irradiation means for irradiating said object which arrives at the inspection position with light in a short period of time in response to said position detection signal;
(c) image sensing means for picking up said object which arrives at the inspection position and irradiated with the light as a static image and for generating an image signal;
(d) inspection means for processing the image signal from said image sensing means to inspect whether said object is good or bad; and
(e) means supplied with both of the image signal and position detection signal for generating a control signal with a voltage corresponding to a level of an image signal of a first image period in said image signal and also an enable signal which is in a high level during a period of an image signal of a second image period in said image signal, said inspection means being supplied with said image signal, control signal and enable signal whereby said inspection

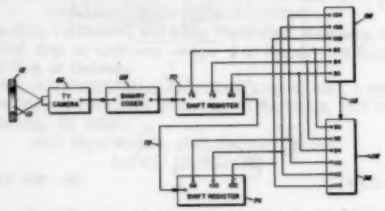
means is driven during a period where said enable signal is in a high level to conduct said inspection of said object based upon said image signal of the second image period.

4,486,777

DEFECT DETECTING APPARATUS AND METHOD

Tatsuo Yamamura, Hino, Japan, assignor to Fuji Electric Company, Ltd., Kanagawa, Japan

Filed Sep. 30, 1982, Ser. No. 432,408
Claims priority, application Japan, Oct. 14, 1981, 56-162725
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—106 **7 Claims**



1. Defect detecting apparatus for detecting a defect in a substrate including a defect at the periphery thereof, said substrate being sequentially scanned by an image pickup device along each of a plurality of vertically displaced horizontal lines for equal horizontal scanning periods, comprising:

binary coder means coupled to the output of said image pickup device, said binary coder means converting the output of said image pickup device to a binary coded signal having a polarity determined by the amount of light reflected from said substrate at each incremental portion of said scanning periods;

signal shifting means for shifting said binary coded signal for a first interval which is less than said horizontal scanning period to obtain a first shifted output;

further signal shifting means for shifting said coded binary signal for a second interval, measured from the end of said first interval, which is equal to said horizontal scanning period to obtain a second shifted output; and

comparator means for comparing the polarities of said first and second shifted outputs, the presence of a defect in said substrate being indicated when said first and second shifted outputs have predetermined opposite polarities at a given instant of time followed by a reversal in the polarities of each of said first and second shifted outputs.

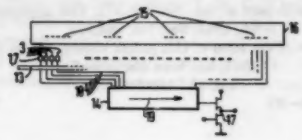
4,486,778

ARRANGEMENT FOR CONTACT-FREE MEASUREMENT OF ELECTRICAL CHARGE IMAGES IN ELECTRO-RADIOGRAPHIC RECORDING METHODS

Lothar Risch, Ottobrunn; Ingmar Feigt, Erlangen, and Reinhard Tielert, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 11, 1982, Ser. No. 377,085
Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121494
Int. Cl.³ H04N *5/32, 3/14*
U.S. Cl. 358—111 **17 Claims**

1. An arrangement for the contact-free measurement of electrical charge images which are stored as transmission images on a photoconductor plate by means of electroradiographic recording methods and in which the electrical charge image is scanned to obtain an image representing signal for representing said charge image, which image representing signal can be displayed on a video display screen, characterized in that a matrix of integrated MOS components is provided having an array of floating gate means disposed for scanning of the electrical charge image, and respective individual integrated circuit means on a common substrate coupled with the respective floating gate means for producing individual signals representing the local charge state at respective regions of the charge image and for electrically amplifying such individual signals at the same time.

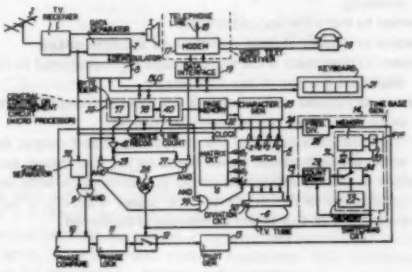


4,486,779

APPARATUS TO DISPLAY GRAPHIC MESSAGES TRANSMITTED BY VIDEOTEXT SYSTEMS

Bernard Marti, Noyal-sur-Vilaine, France, assignor to L'Etat Francais, represente par le Ministre des P.T.T. (Centre National d'Etudes des Telecommunications) and Etablissement Public de Diffusion dit "Telediffusion de France", both of, France

Filed Jul. 2, 1982, Ser. No. 394,542
Int. Cl.³ H04N *7/08*; G06F *3/14*
U.S. Cl. 358—147 **3 Claims**



1. An apparatus for displaying videotext information on a television receiver screen, said apparatus comprising:

internal synchronization means,

phase locking means coupled to be driven by received video signals from a television receiver,

first switching means for selectively connecting the phase locking means to the internal synchronization means,

means including a first and a second means for respectively controlling interlaced and non-interlaced scanning of displays by said television receiver screen,

second switching means for selectively switching between the respective interlaced and non-interlaced scanning control means,

data demodulator means including a means for giving a working status indication,

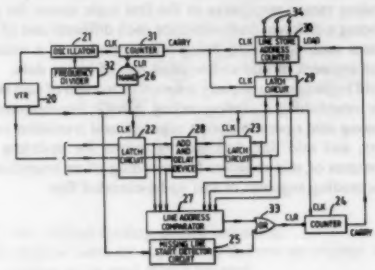
central management control circuit means including a first byte type recognition circuit means for recognizing a type of synchronization in the bytes of a first row of each page of videotext information, and

first logic means coupled between said first byte type recognition circuit means and said first and second switching means and being responsive to the working status indication of the data demodulator means for selectively operating the first and second switching means responsive to said first byte type recognition circuit means and to said demodulator means to select between external synchronization contained within said received video signals and said internal synchronization means.

4,486,780
SEQUENTIAL DATA BLOCK ADDRESS PROCESSING CIRCUITS

John G. S. Ive, London, England, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 21, 1981, Ser. No. 226,861
Claims priority, application United Kingdom, Jan. 30, 1980, 8003085
Int. Cl.³ H04N 5/93
U.S. Cl. 358—160 16 Claims

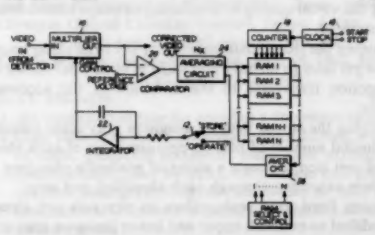


1. A sequential data block address processing circuit for deriving address signals in dependence on incoming data which comprise sequential blocks of data, each block including an incoming address signal represented by a number, the numbers of said sequential blocks of data changing cyclically from block to block, the circuit comprising: first means for generating output address signals corresponding to the incoming address signals such that said output address signals are represented by numbers which change cyclically from block to block; second means connected to said first means and receiving a data signal including said incoming address signals, said second means including comparator means for comparing incoming address signals with respective reference signals to provide an output signal; and control means in response to said output signal to provide a control signal to said first means when a predetermined plurality of said incoming address signals have been correctly received in sequence within said data signals for causing said first means to generate said output address signals in synchronism with said incoming address signals only when said predetermined plurality of said incoming address signals have been correctly received in sequence within said data signal.

4,486,781
VIDEO SIGNAL WHITE LEVEL CORRECTOR

Michael E. Wilmer, Portola Valley; Leland D. Green, Sierra Madre, and Rudiger W. Tietze, Altadena, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 19, 1982, Ser. No. 369,395
Int. Cl.³ H04N 5/30, 5/21
U.S. Cl. 358—163 4 Claims



1. A scan detector system for compensating for shading errors in the detected white level signals in a video signal comprising:

multiplier circuit means for receiving for each bit position said video signal and multiplying it by a received gain control signal to generate a corrected video signal,

comparator circuit means for generating a high or low signal consisting of a single bit in response to said corrected video signal in comparison with a reference voltage,

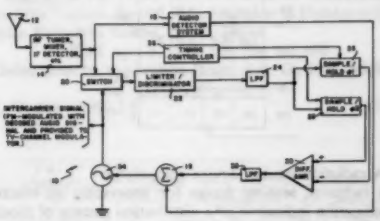
random access memory means for storing said high or low signal in a first mode, and for reading out said high or low signal in a second mode, and

integrator circuit means, responsive to said comparator means output in said first mode, and to said memory means output in said second mode, for changing said gain control signal one increment higher or lower than the gain control signal for the previous bit position and applying it to said multiplier circuit means.

4,486,782
FREQUENCY STABILIZATION OF A VCO FM MODULATOR

Wayne E. Bretl, Schaumburg, and Victor G. Mycynek, Des Plaines, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 7, 1982, Ser. No. 385,635
Int. Cl.³ H04N 5/62
U.S. Cl. 358—197 10 Claims



1. In a signal decoder for processing received audio and video signals wherein audio information is received on a reference audio carrier, said signal decoder including detector means for separating the audio signal from said reference audio carrier and a voltage controlled oscillator for remodulating the audio signal, a system for stabilizing said voltage controlled oscillator comprising:

switch means alternately coupled to said received reference audio carrier and said voltage controlled oscillator for generating a multiplexed output signal comprised of said reference audio carrier and said voltage controlled oscillator signal;

discriminator means coupled for receiving said multiplexed output signal and responsive to the frequency thereof for alternately generating first and second DC voltage signals respectively representing the frequencies of said reference audio carrier and said voltage controlled oscillator signal;

low-pass filter means coupled to said discriminator means for removing from said first and second DC voltage signals variations therein due to audio modulation in said system;

first and second sample and hold circuits coupled to said low-pass filter means for respectively sampling said low-pass filtered first and second DC voltage signals;

a differential amplifier comparing the outputs of said first and second sample and hold circuits for generating a correction signal representing a frequency difference between said reference audio carrier and said voltage controlled oscillator; and

adding means coupled to said detector means and said differential amplifier for adding said correction signal to said detected audio signal for generating a control signal and

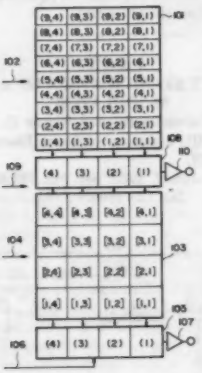
for providing said control signal to said voltage controlled oscillator wherein the average frequency of said voltage controlled oscillator is adjusted so as to coincide with the average frequency of said reference audio carrier.

4,486,783

SOLID STATE IMAGE SENSING DEVICE

Nobuyoshi Tanaka, Yokohama, and Takao Kinoshita, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1982, Ser. No. 390,054
Claims priority, application Japan, Sep. 17, 1981, 56-146587
Int. Cl.³ H04N *3/14*
U.S. Cl. 358—213 **43 Claims**



1. A radiation sensing device comprising:

(A) radiation sensing means for generating an electrical indication indicative of a distribution pattern of received radiation;

(B) storing means for storing an electrical indication;

(C) transfer and read-out means, disposed between said sensing means and said storing means, and arranged for transferring an electrical indication from the sensing means to the storing means and for reading out an electrical indication from the sensing means; and

(D) read-out means for reading out an electrical indication from said storing means.

4,486,784

IMAGE COMPRESSION SYSTEMS

Dennis G. Abraham, Concord, and Thomas W. Gallman, Charlotte, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,021
Int. Cl.³ H04N *1/40, 7/13*
U.S. Cl. 358—261 **7 Claims**

MODE	ELEMENTS TO BE CODED		NOTATION	CODEWORD
PASS	b1, b2		P	0001
HORIZONTAL	a0a1, a1a2		H	001+M(a0a1)+M(a1a2)
VERTICAL	a1 JUST UNDER b1	a1 b1=0	V (0)	1
	a1 TO THE RIGHT OF b1	a1 b1=1	VR (1)	011
		a1 b1=2	VR (2)	000011
		a1 b1=3	VR (3)	0000011
	a1 TO THE LEFT OF b1	a1 b1=1	VL (1)	010
		a1 b1=2	VL (2)	000010
		a1 b1=3	VL (3)	0000010

1. A system for compressing image data comprising:

means for storing a reference line of the image in the form of successive run length code words,

means for storing a to-be-coded current line of the image in the form of successive run length code words,

a plurality of transition point registers

an operating point register,

first logic means, responsive to the contents of said transition point and operating point registers, defining an appropriate one of a finite number of relationship states relative to the contents of said registers,

encoding means responsive to the first logic means for producing a different code word for each different one of said states such codeword being representative of a variable size segment of said to-be-coded line of image data,

second logic means uniquely responsive to each of said states for establishing a corresponding specific interconnection among said operating point register, said transition registers, and said line data storing means for updating the contents of said registers for encoding of an immediately succeeding segment of said to-be-encoded line.

4,486,785

ENHANCEMENT OF VIDEO IMAGES BY SELECTIVE INTRODUCTION OF GRAY-SCALE PELS

Dana A. Lasher, Raleigh, and William K. Stelzenmuller, Morrisville, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,382
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—284 **8 Claims**

1. In a system for receiving and storing non-coded binary image pel data and for generating an image derived from the stored data on a gray scale display device, a method for enhancing the visual quality of the displayed image characterized by the steps of:

examining the stored data on a pel by pel basis along successive pel lines to identify unit steps in binary pel values in a direction transverse to the direction of the successive lines;

modifying the stored data by assigning gray scale values to a limited number of pels on opposite sides of each identified unit step to create a string of gradually changing pel values extending through each identified unit step;

assigning fixed gray scale values to any pels not already modified to establish upper and lower limits on gray scale pel values; and

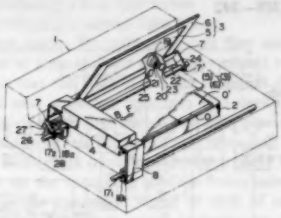
generating the displayed image in accordance with the assigned gray scale pel values.

4,486,786

ORIGINAL READING DEVICE

Tadashi Sato, Kokubunji, and Haruo Tsunoi, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1982, Ser. No. 413,988
Claims priority, application Japan, Sep. 8, 1981, 56-141323; Sep. 8, 1981, 56-141324; Oct. 9, 1981, 56-15078[U]
Int. Cl.³ H04N 1/10
U.S. Cl. 358—293 18 Claims



1. An original reading device including:

an original table for supporting thereon an original with its surface to be read facing upward;

original keep means for pressing against the surface to be read for holding the original on said original table, the area of said original keep means which is urged against the surface to be read being a transparent plate, said original keep means defining a guide path along a predetermined direction, said original keep means being vertically movable so that the level thereof when pressing against the surface to be read is variable in accordance with the thickness of the original; and

scanning means opposed to the surface to be read with said transparent plate being interposed therebetween, said scanning means having photoelectric converter means and a lens for forming an image of the surface to be read on said photoelectric converter means, said scanning means being movable in said predetermined direction to scan the original and being vertically movable, said scanning means having a spacer portion bearing against said guide path defined in said original keep means to maintain the length of the optical path between said lens and the surface to be read constant even when the level of said original keep means with respect to the surface to be read varies,

wherein said spacer portion of said scanning means starts to move forward in said predetermined direction from a position displaced from said guide path, and the entrance portion of said guide path is formed into a sloped surface which becomes gradually higher in the direction of forward movement of said spacer portion.

4,486,787

INTELLIGENT COPIER

Nagahiro Gocho; Hitomi Tojiki; Asao Hayashi; Koji Kambara, and Toru Nobuto, all of Hachioji City, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Aug. 12, 1982, Ser. No. 407,622
Claims priority, application Japan, Aug. 14, 1981, 56-126561
Int. Cl.³ H06N 1/22, 1/40
U.S. Cl. 358—296 6 Claims

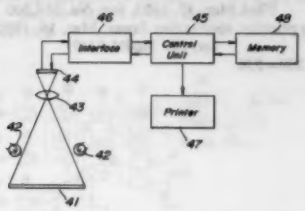
1. An intelligent copier for copying a document comprising:

a static induction transistor image sensor having a plurality of static induction transistor image cells arranged two-dimensionally pixel by pixel, each image cell storing respective analog pixel signals which can be read out in a nondestructive manner without substantially affecting the stored signals;

a means for projecting a document image once onto said static induction transistor image sensor;

a control means for reading out the analog pixel signals from said static induction transistor image sensor; and

a printer for receiving the read out analog pixel signals to form at least one copy of said document whereby the



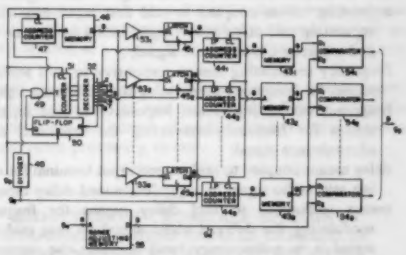
analog pixel signals stored in said image cells are capable of being read out a plurality of times to form a plurality of copies of said documents which has been only once exposed onto said static induction transistor image sensor.

4,486,788

METHOD FOR PRODUCING A HALFTONE PLATE FOR USE IN A PICTURE REPRODUCING MACHINE

Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Apr. 6, 1982, Ser. No. 365,890
Claims priority, application Japan, Apr. 14, 1981, 56-55841
Int. Cl.³ H04N 1/24, 1/40
U.S. Cl. 358—298 13 Claims



1. A method for producing a halftone plate from an original picture having a continuous tone directly, for use in a picture reproducing machine wherein a reproduction picture is recorded on a photosensitive material by means of a plurality of exposure light beams which are independently modulated by picture signals obtained by scanning the original picture, the improvement which comprises the steps of:

(a) dividing a halftone dot area into picture elements depending on a screen angle approximate to the desired screen angle, whose tangent value is a rational number;

(b) assigning addressing numbers to the picture elements of the divided halftone dot area in a predetermined order;

(c) storing data for halftone dot area rates and forms of halftone dot patterns into addresses of memories which are addressed by a common address number;

(d) selecting one of the memories depending on the picture signals obtained by scanning the original picture;

(e) reading the data out of the selected memory in parallel; and

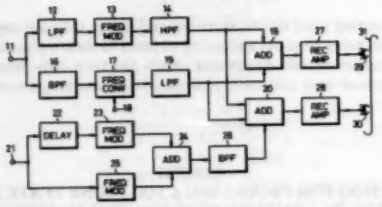
(f) controlling the exposure light beams according to the read-out data, thereby producing a halftone plate.

4,486,789

MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS

Akira Hirota, Chigasaki, and Yoshihiko Ota, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 15, 1982, Ser. No. 358,300
Claims priority, application Japan, Mar. 16, 1981, 56-37675
Int. Cl.³ H04N 9/491
U.S. Cl. 358—330 9 Claims



1. A magnetic recording apparatus comprising:

a first input terminal for receiving a color video signal;

a second input terminal for receiving an audio signal;

separating means coupled to said first input terminal, for separating said color video signal into a luminance signal and a carrier chrominance signal;

frequency modulating means responsive to said separating means for frequency-modulating the luminance signal;

frequency converting means responsive to said separating means for frequency-converting the separated carrier chrominance signal;

delay means coupled to said second input terminal for delaying said audio signal by a predetermined delay time;

means responsive to said delay means for frequency-modulating the delayed audio signal so that said audio signal is in a frequency band between the output frequency modulated luminance signal of said frequency modulating means and the output frequency converted carrier chrominance signal of said frequency converting means;

means for multiplexing said audio signal from said second input terminal and the delayed audio signal from said delay means and for producing a multiplexed audio signal for recording;

multiplexing means for multiplexing said frequency modulated luminance signal, said frequency converted carrier chrominance signal, and said multiplexed audio signal and for producing a first multiplexed recording signal;

fixed head recording means for recording a control signal in a track with a predetermined width on a magnetic tape; and

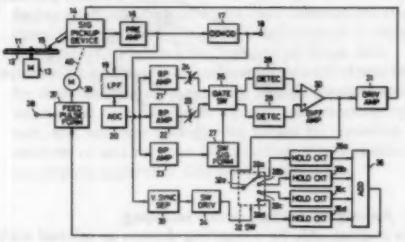
rotary head recording means for recording said first multiplexed recording signal from said multiplexing means over a control signal previously recorded by at least one of said rotary head recording means, so that said first multiplexed recording signal is superimposed on said previously recorded control signal in predetermined areas on the magnetic tape.

4,486,790

DRIVE CIRCUIT FOR FEEDING A REPRODUCING ELEMENT ACROSS A ROTARY MEDIUM HAVING SIGNALS RECORDED THEREON

Hiroyuki Sugiyama, Isehara; Ryozo Abe, Yokohama, and Susumu Sakakibara, Sagamihara, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 29, 1982, Ser. No. 343,998
Claims priority, application Japan, Jan. 30, 1981, 56-12570
Int. Cl.³ H04N 5/76; G11B 21/10
U.S. Cl. 358—342 6 Claims



1. A drive circuit for feeding a reproducing element across a rotary recording medium during reproduction of a signal recorded thereon, said reproducing element being part of a reproducing element having a signal pickup device with a reproducing element for reproducing said recorded signals from said rotary recording medium, feeding means for feeding said signal pickup device, and means for obtaining a tracking error signal to enable a tracking control with respect to said reproducing element, said tracking error signal being multiplexed with an unwanted signal component caused by an eccentricity of said rotary recording medium, said drive circuit comprising:

sampling means for sampling said tracking error signal when said reproducing element is reproducing a point on said rotary recording medium corresponding to one of a plurality of pairs of points on said rotary recording medium, each of said pairs of points being points which are located at symmetrical positions which are diametrically opposed to each other on the same track turn of said rotary recording medium, the symmetry of said point positions being taken with respect to a center of said rotary recording medium;

averaging means for averaging a value sampled by said sampling means, and for giving a signal which substantially corresponds to a DC component of said tracking error signal; and

means for generating a feed pulse having a pulse width which is in accordance with the DC component obtained from said averaging means, and for applying said feed pulse to said feeding means.

4,486,791

APPARATUS FOR OPTICALLY REPRODUCING SIGNALS RECORDED ON A ROTATING RECORDING MEDIUM

Yoshiyo Wada; Hisao Kinjo, both of Yokohama; Ichiro Ueno, Isehara; Yoshihiko Honjo, Ayase; Kazuo Tatsuguchi, Yokohama, and Juichi Shikunami, Sagamihara, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 24,594, Mar. 28, 1979, abandoned. This application May 4, 1982, Ser. No. 374,781
Claims priority, application Japan, Mar. 29, 1978, 53-35483
Int. Cl.³ H04N 5/85; G11B 7/00
U.S. Cl. 358—342 6 Claims

1. An apparatus for optically reproducing signals recorded on a rotating recording medium, said signals comprising an information signal recorded along track turns disposed in a

mutually side-by-side arrangement on the recording medium and at least one kind of reference signal recorded along the track turns and in the central part between the centerlines of mutually adjacent track turns, said reference signals overlapping the lateral edges of said adjacent track turns of the information signal, said information signal being recorded in a form of a succession of pits formed on a substantially flat surface of the recording medium, the depth of said pits being substantially uniform, said apparatus comprising:

means for producing a first light beam;

means for producing a second light beam;

optical system means for projecting said first and second light beams to form spots on the surface of said recording medium so that the light beams are reflected from said surface of said recording medium, said optical system means receiving said first and second light beams as they are reflected from said surface of said recording medium, the width in the track transverse direction of the first light beam spot on the recording medium being substantially the same as the transverse width of each of said track turns, said optical system means including an objective lens having a depth of focus which is substantially equal to or less than two times said uniform pit depth;

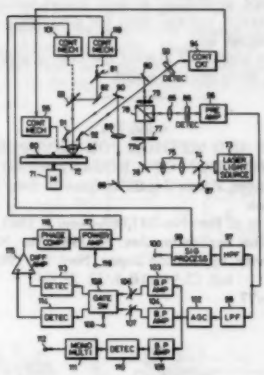
first detecting means for detecting said reflected first light beam to produce a reproduced signal which comprises a reproduced information signal and at least one reproduced reference signal;

means for separating the reproduced reference signal from the reproduced signal and for producing a tracking control signal in response to the reproduced reference signal;

tracking control means responsive to said tracking control signal for controlling the optical system means so that the center of the first light beam spot follows along the centerline of each of said track turns;

second detecting means for detecting said reflected second light beam to produce a focus control signal; and

focus control means responsive to said focus control signal for controlling the distance of said objective lens with respect to the recording medium so that said first light beam is focused on approximately said substantially flat surface of the recording medium or on bottoms of the information signal pits.



4,486,792

MAGNETIC RECORDING AND REPRODUCING DEVICE

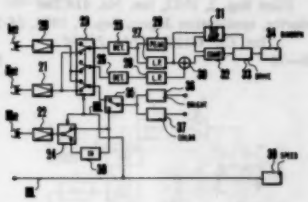
Hiroo Edakubo, Tokyo, and Masaya Maeda, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,477

Claims priority, application Japan, Dec. 27, 1980, 55-186512

Int. Cl.³ H04N 5/783; G11B 21/10

U.S. Cl. 360—10.2 22 Claims



1. An apparatus for reproducing video signals recorded on a tape-shaped medium comprising:

(a) a principal rotation head for reproducing the video signals from a recording track in said tape-shaped medium;

(b) an auxiliary rotation head movable with said principal rotation head to sense a deviation in position of said principal rotation head from said recording track;

(c) a video processing circuit for processing the reproduced video signals;

(d) tracking control means for diminishing said deviation of said principal rotation head by using the reproduction output of said auxiliary rotation head;

(e) assigning means for selectively operating in a first reproduction mode where signals on said tape-shaped medium are reproduced at a normal speed and a second reproduction mode where signals on said tape-shaped medium are reproduced at a speed different from said normal speed; and

(f) said assigning means including switching means responsive to selection of said second reproduction mode for connecting the output of said auxiliary rotation head to said video processing circuit.

4,486,793

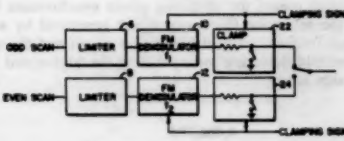
REDUCTION OF CROSSTALK EFFECTS IN MODULATED AUDIO SIGNALS CARRIED IN ADJACENT TRACKS OF RECORDED MEDIA

Craig C. Todd, Muir Beach, Calif., assignor to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Filed Jul. 19, 1982, Ser. No. 399,235

Int. Cl.³ G11B 5/04, 15/02

U.S. Cl. 360—30 13 Claims



1. A system in which audio signals modulated and recorded on a plurality of adjacent tracks produce undesired crosstalk interference signal components from one or more adjacent tracks when a desired track is played back comprising the method of offsetting the nominal carrier frequency of the modulated signals in adjacent tracks by an amount sufficient to shift the crosstalk interference signal components to at least the high frequency portion of the desired audio band or beyond

while maintaining the modulated frequency spectra of the signals carried in adjacent tracks substantially overlapping.

4,486,794

HEAD SERVO CIRCUIT IN A MAGNETIC REPRODUCING APPARATUS

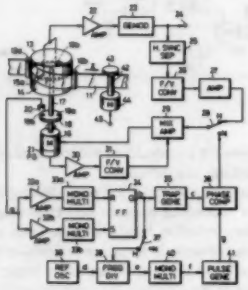
Kenji Itoh, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Sep. 2, 1982, Ser. No. 414,294

Claims priority, application Japan, Sep. 7, 1981, 56-140800

Int. Cl.³ G11B *15/44, 21/04*

U.S. Cl. 360—70 **5 Claims**



1. A head servo circuit in a magnetic reproducing apparatus comprising rotary heads for reproducing a video signal recorded on tracks formed obliquely with respect to the longitudinal direction of a magnetic tape, a motor for rotating said rotary heads, and magnetic tape traveling means for causing said magnetic tape to travel at a high speed during a high-speed reproduction mode and, upon a mode switching, causing said magnetic tape to travel at a speed corresponding to a mode other than said high-speed reproduction mode, said head servo circuit comprising:

detecting means for detecting the rotation of said motor and producing a signal in accordance with the detected rotation;

reference frequency signal generating means for generating a reference frequency signal;

phase comparing means for comparing phases of the reference frequency signal generated by said reference frequency signal generating means and the signal from said detecting means;

control means for controlling the rotation of said motor by an output signal of said phase comparing means during a mode other than the high-speed reproduction mode;

cut off means for cutting off the supply of the output signal of said phase comparing means to said control means during the high-speed reproduction mode; and

synchronizing means for obtaining phase synchronism between the reference frequency signal generated by said reference frequency signal generating means and the signal from said detecting means during the high-speed reproduction mode.

4,486,795

DISC DRIVE SERVO SYSTEM

Ryuichi Naito, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 21, 1982, Ser. No. 451,830

Claims priority, application Japan, Dec. 23, 1981, 56-208894; Dec. 23, 1981, 56-208895

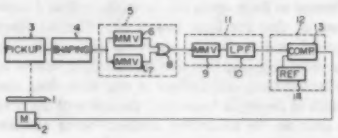
Int. Cl.³ G11B *21/10*

U.S. Cl. 360—77 **14 Claims**

1. A disc drive servo system for controlling the drive of a disc carrying a binary digital signal, said digital signal including (i) information signal portions in which a position of an inversion of said digital signal is determined in accordance with an analog information signal and (ii) synchronizing signal portions having successive maximum periods of said inversion, comprising:

a pick up means for detecting the digital signal on said disc;

a timer means responsive to an output signal of the pick up means, said timer means being operable to initiate a timing operation from an initial state upon receipt of one of a positive and negative inversion of said digital signal and to produce an output signal when no further inversion occurs during a time period of at least twice as long as the maximum period of the inversion;



a frequency-to-voltage converter responsive to the output signal of said timer means for generating an output voltage level;

means for generating a reference voltage level;

a comparator, responsive to said output voltage level and said reference voltage level for generating a disc drive control signal; and

a disc drive means for driving the disc in accordance with said disc drive control signal.

4,486,796

APPARATUS AND METHOD FOR CONTROLLING THE POSITION OF A ROTARY HEAD

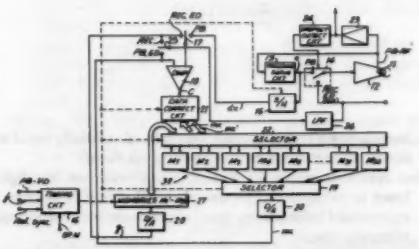
Hitoshi Sakamoto, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 317,867, Nov. 3, 1981, Pat. No. 4,443,823. This application Jan. 30, 1984, Ser. No. 575,266

Claims priority, application Japan, Nov. 12, 1980, 55-159111

Int. Cl.³ G11B *5/52, 21/04*

U.S. Cl. 360—77 **1 Claim**



1. An apparatus for reproducing information signals recorded in a track on a record medium, comprising

a rotary magnetic head for scanning along a track on the record medium and reproducing the information signal recorded therein;

deflection means mounting said magnetic head and being operable in response to the reception of an electrical drive signal for deflecting said head in a direction transverse to the track;

means for supplying a dither signal to said deflection means;

envelope detecting means for detecting the envelope of the output of said magnetic head;

tracking drive signal generating means responsive to the detected envelope for providing generated tracking drive

signals as a function of the deviation of said head relative to the track being scanned thereby;

memory means for storing a plurality of standard tracking drive signals corresponding to successive locations along a track;

means for reading said standard tracking drive signals from said memory means in response to rotation of said head;

supply means for selectively supplying said generated tracking drive signals or said standard tracking drive signals read from memory means to said deflection means; and

drop-out detecting means for detecting a dropout in said envelope and for controlling said supply means in response thereto.

4,486,797

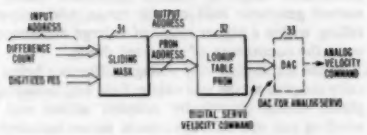
SLIDING MASK VARIABLE RESOLUTION VELOCITY TRAJECTORY FOR TRACK FOLLOWING SERVO

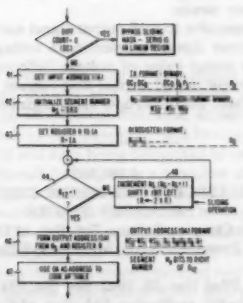
Michael L. Workman, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,508

Int. Cl.³ G11B *5/55, 21/08;* G05D *13/62*

U.S. Cl. 360—78 **7 Claims**





1. Apparatus for generating a velocity profile for servo system, said velocity profile representing the desired velocity of the load of said servo system in moving from one position to another, comprising

means for dividing the time during which said servo system is moving said load into a plurality of segments, each of said segments being half the size of the preceding segment,

means for generating for each of said segments a fixed number of values for the desired velocity of said load, and

means for utilizing said generated velocity values for controlling the moving of said load.

4,486,798

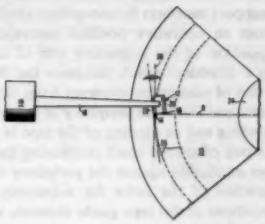
SELF-CLEANING MAGNETIC HEAD AIR BEARING SLIDER AND METHOD

Norbert A. Felius, and Tim W. Lile, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 257,064, Apr. 24, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 431,405

Int. Cl.³ G11B *5/60, 15/64, 17/32*

U.S. Cl. 360—103 **6 Claims**



1. A magnetic disk file comprising:

rotary magnetic disk means having circular data tracks registered thereon;

a magnetic head slider including a pair of longitudinal rails and a transducer at the trailing end of one of the rails for interacting with said magnetic disk means in transducing relation;

said rails being formed on the surface of said slider that faces said disk means for providing an air bearing surface; and

said slider and rails being positioned at a predetermined skew angle relative to a tangential velocity vector line that passes through the transducer tangent to the particular data track over which said transducer is then disposed for causing airborne debris particles that are drawn in under the rails to be directed in a path that substantially avoids said transducer to reduce wear thereof.

4,486,799

TAPE GUIDE DEVICE FOR VIDEO TAPE RECORDER

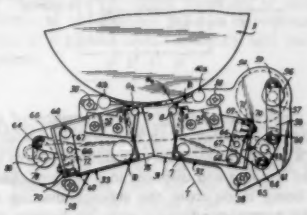
Hideo Kawamoto, Machida, and Seigo Uehara, Fujisawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 10, 1982, Ser. No. 347,552

Claims priority, application Japan, Feb. 12, 1981, 56-18257

Int. Cl.³ G11B *15/60*

U.S. Cl. 360—130.23 **9 Claims**



1. In an apparatus including a chassis and a tape guide drum having a root portion at which it is secured to said chassis, and elongated entrance and exit tape guide elements adapted to be disposed in operative positions relatively close to each other and to the periphery of said drum for guiding a tape wound about said drum in an Ω-shaped configuration between said entrance and exit tape guide elements; a mounting structure for said tape guide elements comprising a base member adjustably

located adjacent said root portion of the drum in a predetermined position in respect to said periphery of the drum, first and second guide support members having said entrance and exit tape guide elements respectively attached thereto and being mounted on said base member to support and dispose said tape guide elements adjacent said periphery of the drum at levels corresponding to the path of a tape in said Ω-shaped configuration and with the longitudinal axes of said tape guide elements generally parallel to the axis of said drum, fastening means adapted to be tightened for fixing the adjustably located base member to said chassis, means mounting at least one of said guide support members for movement relative to said base member from an operative position corresponding to said operative position of the respective one of said tape guide elements in a direction which increases the distance of said respective one of said guide elements from the other of said guide elements and from said periphery of the drum, thereby to facilitate winding and unwinding of the tape in respect to said drum, and a pair of spaced apart positioning members on said base member engagable against the periphery of said drum at said root portion of the latter for accurately locating said operative positions of the tape guide elements relative to said drum when said fastening means are tightened.

4,486,800

THERMAL METHOD FOR MAKING A FAST TRANSITION OF A SUPERCONDUCTING WINDING FROM THE SUPERCONDUCTING INTO THE NORMAL-CONDUCTING STATE, AND APPARATUS FOR CARRYING OUT THE METHOD

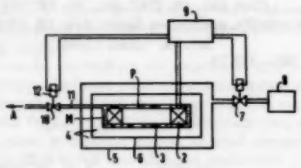
Holger Franksen, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 16, 1982, Ser. No. 450,444

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151119

Int. Cl.³ H02H 9/00

U.S. Cl. 361—19 **16 Claims**



1. In a method for making a fast transition of the entire superconducting winding of an electrical apparatus which is cooled by a cryogenic medium contained in spaces around or through the winding and disposed in a vacuum chamber, the transition being made from the superconducting operating state to the normal-conducting state by heating the entire winding in the event that part of the superconducting winding becomes normal-conducting due to a disturbance, the improvement comprising the step of:

introducing a predetermined quantity of a gas which is at a higher temperature and would be frozen at the superconducting operating temperature into the vacuum chamber such that the superconducting parts of the winding are heated above the critical transition temperature characteristic for superconduction.

4,486,801

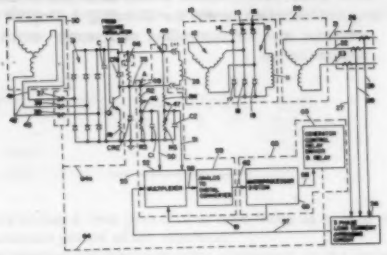
GENERATOR SHORTED DIODE PROTECTION SYSTEM

Melvin C. Jackovich, Stillman Valley; William Spencer, Rockford, and James B. Thom, Rock City, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Continuation-in-part of Ser. No. 205,383, Nov. 10, 1980, abandoned. This application Jan. 19, 1982, Ser. No. 340,618

Int. Cl.³ H02H 7/06

U.S. Cl. 361—21 **12 Claims**



1. A shorted diode protection system for a brushless alternating current generator of the type having an energizeable exciter field winding, said system including:

means for sensing a voltage difference across said exciter field and pairing said voltage difference with generator load current at the instant said voltage difference is sensed, said sensing means thereby providing an output signal that depends upon said instantaneous voltage sensed and said load current, said output signal falling within a predictable range of voltage difference values over a normal generator load current range, said output signal falling within a higher range of voltage difference values upon the occurrence of a shorted diode,

said means for sensing said voltage difference being electrically coupled across said exciter field and including multiplexer means electrically coupled across said exciter winding and to a microprocessor means included in said means responsive to said output signals, said multiplexer means adapted to receive signals from either side of said exciter winding and a control signal from said microprocessor means,

means responsive to said output signal such that whenever said output signal representing a voltage difference exceeds a preset value of voltage difference at any given load current in said normal load current range, an output is generated that interrupts the energization of said exciter field.

4,486,802

DRIVING CIRCUIT FOR SHORT CIRCUIT-PROOF READOUT STAGES

Claus-Jürgen Claussen, Leimen, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie AG, Mannheim-Käfertal, Fed. Rep. of Germany

Filed Dec. 20, 1982, Ser. No. 451,480

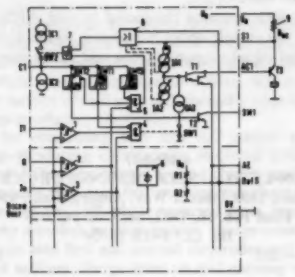
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 3150703

Int. Cl.³ H02H 9/02

U.S. Cl. 361—93 **1 Claim**

1. Driving circuit for short-circuit-proof readout stages with a plurality of protection-wired inputs and outputs, comprising a signal input, a first comparator having a first input connected to said signal input, a second input referred to a reference voltage and an output, a first AND gate being driven by said first comparator and having first, second and third inputs and an output, said first input being connected to said output of said first comparator, said first AND gate being switched into conduction if a positive voltage is present at said output of said first comparator, a first switch being operatively connected to

said output of said first AND gate, said first switch being opened when said first AND gate is conducting and being connected to a negative potential when closed, first, second and third current sources, said first current source being connected to a supply potential, said third current source being connected to said first switch and being connected to the negative potential through said first switch when said first switch is closed, a Darlington driver stage having an emitter, having a collector output and having a base being connected to said third current source and being connected to said first current source for supplying said Darlington stage when said first switch is open, a power output being connected to said collector output of said Darlington stage, a voltage supply output being connected to said emitter of said Darlington stage, said second current source being shunted across said third current source and being connected to said base of said Darlington stage, an evaluation unit, said first and second current sources being connected to and addressed by said evaluation unit, a current sensor input and a threshold voltage output being connected to and influencing said evaluation unit, an OR gate being connected to and influenced by said evaluation unit, a second switch being operatively connected to said OR gate, a fourth current source and a current sink each being connected to said second switch, an input terminal for an



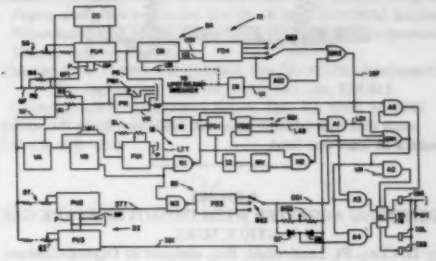
external capacitor being connected to said second switch for selectively charging through said fourth current source and discharging through said current sink, first, second and third Schmitt triggers each having an output, each having a different switching threshold and each being connected to said external capacitor input terminal for receiving a capacitor charge, said second Schmitt trigger having a setting input, a second AND gate having first, second and third inputs and having an output connected to said OR gate for controlling external capacitor charging and discharging, said output of said first Schmitt trigger being connected to said second input of said first AND gate, to said first input of said second AND gate and to said setting input of said second Schmitt trigger, said output of said third Schmitt trigger being connected to said second input of said second AND gate, a disturbance alarm output, a second transistor stage being connected between said disturbance alarm output and said output of said second Schmitt trigger, an acknowledgement input, a second comparator having a first input connected to said acknowledgement input, a second input referred to the reference voltage and an output connected to said third input of said second AND gate, another input, and a third comparator having a first input connected to said other input, a second input referred to the reference voltage and an output connected to said third input of said first AND gate.

4,486,803

ELECTRONIC SYSTEM FOR HIGH AMPERAGE CIRCUIT INTERRUPTION APPARATUS

Henry J. Zylstra, Alburnette, Iowa, assignor to Square D Company, Palatine, Ill.

Filed May 9, 1983, Ser. No. 493,115
Int. Cl.³ H02H 3/093
U.S. Cl. 361—95 **8 Claims**



7. A circuit breaker for use in an electrical system in which said breaker may be utilized either as an upstream or downstream breaker having interruption means operable for interrupting a plurality of line conductors and a ground fault transformer with each conductor having a respective current transformer for sensing the current in the respective line conductor and for deriving a signal corresponding to the overcurrent present in the respective line conductor and for applying a signal to said ground fault transformer for deriving a ground fault signal in the event the current in said ground fault transformer sums to a another value than zero, the improvement comprising:

a ground fault circuit for detecting any one of a plurality of ground fault currents above a predetermined level and for generating a signal in response to said ground fault current,

means for generating pulses at a selected frequency in response to the detection of said ground fault current,

means operated by said pulses for providing outputs at a variety of time intervals including one output corresponding to a time interval shorter than each other time interval,

shorter time means operable in response to said one output corresponding to said shorter time interval for operating said interruption means,

selection means optionally operable for operating said interruption means for interrupting said plurality of conductors in response to any of said outputs,

and means operable by one ground fault circuit in a downstream breaker for preventing operation of said shorter time means in an upstream breaker in response to the detection of a ground fault current by said one ground fault circuit.

4,486,804

OVERLOAD PROTECTOR FOR A TELEPHONE SET

John C. Watson, and Bing G. Chan, both of London, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 30, 1983, Ser. No. 480,260
Int. Cl.³ H02H 5/04
U.S. Cl. 361—104 **10 Claims**

1. An overload protector for a telephone set and similar telecommunications terminals, comprising;

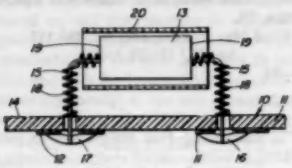
an electrical component having DC continuity and DC resistance, said component having two leads;

said leads soldered to a conductor on a circuit board;

a compression spring positioned on each lead and held under compression between the circuit board and the component;

an insulating member around the component; and

the arrangement such that on a continuous overload above a predetermined value, the component heats up to a level



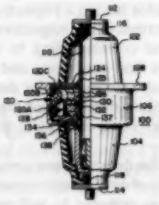
such that heat travels down the leads and melts the solder for at least one lead.

4,486,805

LIGHTNING ARRESTER WITH IMPROVED SPARK GAP STRUCTURE

Jay D. Cline, Ft. Lauderdale, Fla., assignor to Dayton-Granger, Inc., Ft. Lauderdale, Fla.

Filed Mar. 7, 1983, Ser. No. 473,175
Int. Cl.³ H02H *9/06*
U.S. Cl. 361—133 **10 Claims**



1. An arc gap arrangement for a lightning arrester comprising: first and second annular electrodes concentrically arranged relative to one another, the first of said electrodes having a generally cylindrical inner surface which tapers to a smaller diameter toward one end thereof and the second of said electrodes having a generally cylindrical outer surface sized to be spaced apart from the inner surface of said first electrode when received therein, said first and second electrodes being displaced axially relative to one another with the amount of axial displacement defining the gap between the second electrode and the tapered portion of said first electrode to thereby define the arc over voltage of said lightning arrester; and magnetic means asociated with said electrodes and positioned for moving an arc circularly around said cylindrical surfaces from the point of arc ignition and axially away from the tapered portion of said first electrode to thereby lengthen and circulate the arc until it is extinguished.

4,486,806

ELECTRONIC DOOR LOCKING SYSTEM FOR AN AUTOMOTIVE VEHICLE

Haruo Mochida, Yokohama, and Hirotoshi Namazue, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited and Kokusan Kinzoku Kogyo Co., Ltd., both of, Japan

Filed Apr. 29, 1982, Ser. No. 373,287
Claims priority, application Japan, Apr. 30, 1981, 56-66011
Int. Cl.³ H01H *47/22*
U.S. Cl. 361—172 **15 Claims**

1. A door locking system for an automotive vehicle for locking vehicle doors, which comprises:

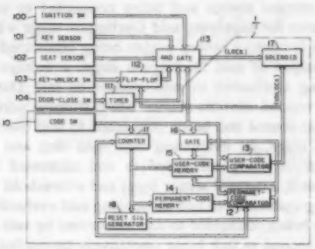
(a) a means for generating a door-locking signal;

(b) an ignition switch for outputting an ignition-off signal when the engine of the vehicle is not operating;

(c) a door-close switch for outputting a door-close signal when all of the vehicle doors are closed;

(d) a timer connected to said door-close switch for outputting a timer signal a predetermined period after the vehicle doors are closed;

(e) an AND gate; input terminals of which are connected to said means for generating a door-locking signal, said ignition switch and said timer for outputting a door locking-command signal when the ignition-off signal is outputted and one of the door-locking signal and the timer signal is outputted thereto; and



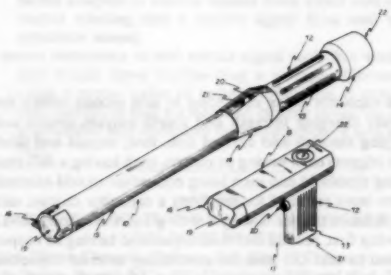
(f) a door lock actuator connected to said AND gate for locking the vehicle doors in response to the door-locking command signal outputted from said AND gate.

4,486,807

NON-LETHAL SELF DEFENSE DEVICE

Serge J. Yanez, 1409 Lincoln Way, Auburn, Calif. 95603

Filed Feb. 16, 1982, Ser. No. 349,045
Int. Cl.³ F41B *15/04*
U.S. Cl. 361—232 **13 Claims**



1. A non-lethal self defense weapon comprising, in combination:

a housing,

a power source within said housing,

a pair of spaced probes operatively connected to said power source on said housing,

a source of light operatively connected to said power source and oriented to face substantially in the same manner as said probes,

first means for delivering a series of electrical pulses to energize said light source to temporarily blind an assailant, and

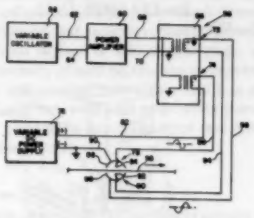
second means for delivering a series of relatively high-voltage electrical pulses to said probes in substantial synchronization with the pulsed energization of said light source.

4,486,808

APPARATUS FOR CONTROLLING RANDOM CHARGES ON A MOVING WEB

Paul A. Cardone, Framingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 3, 1982, Ser. No. 446,564
Int. Cl.³ H01T 19/04
U.S. Cl. 361—235 5 Claims



1. Apparatus for establishing a uniform electrostatic charge on a moving web, comprising:

a first electrostatic charge-producing electrode mounted in a fixed position and spaced a finite distance from a surface of said moving web;

a first energizeable source of AC power;

an energizeable source of DC power;

a second energizeable AC source that is 180° phase separated from said first-mentioned source of AC power;

a second electrostatic charge-producing electrode mounted in a fixed position and spaced a finite distance from another surface of said web and generally opposite said first charge-producing electrode; and

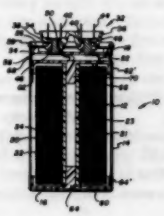
means for connecting said first AC source to said first charge-producing electrode in electrical series and said second AC source to said second charge-producing electrode such that said first and second charge-producing electrodes are 180° phase separted from one another to thereby establish an electrostatic charge-controlling field between said first and second electrodes and a predetermined uniform charge level on said moving web.

4,486,809

ANCHORING MEANS FOR A CAPACITOR

Paul S. Deak, Indianapolis; Dennis R. Henderson, Greenwood, and Gerald A. Voyles, Indianapolis, all of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 237,071, Feb. 23, 1981, abandoned. This application Jul. 30, 1982, Ser. No. 403,914
Int. Cl.³ H01G 1/11
U.S. Cl. 361—272 5 Claims



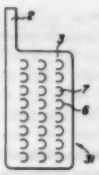
1. A capacitor assembly comprising a container having a bottom and an open end, a capacitor body carried in said container including a centrally disposed hollow core having a bore composed of a plurality of substantially flat intersecting surfaces forming a hexagon and a cup-shaped member carried on said bottom and having a centrally disposed spike extending into said hollow core and engaging said substantially flat intersecting surfaces forming a hexagon to lock said spike in place, means closing said open end, and means for electrically connecting said capacitor body to an electrical current.

4,486,810

ELECTRODE LEAD TAB FOR CAPACITOR

Eihachiro Tomita, Tokyo, and Mitsuru Ota, Iwaki, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi and Radio Research & Technical Incorporated, Tokyo, both of, Japan

Continuation of Ser. No. 221,069, Dec. 29, 1980, abandoned. This application Aug. 30, 1983, Ser. No. 530,611
Claims priority, application Japan, Jan. 10, 1980, 55-1687
Int. Cl.³ H01G 1/14; H01R 3/00
U.S. Cl. 361—306 16 Claims



1. An oil-impregnated winding-type capacitor, comprising:

a first dielectric sheet;

a first electrode foil laminated to the first dielectric sheet;

a second dielectric sheet laminated to the first electrode foil;

a second electrode foil laminated to the second dielectric sheet; and

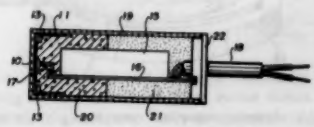
a pair of electrode lead tabs, each of the electrode lead tabs being respectively disposed on one of the electrode foils, wherein the dielectric sheets, the electrode foils and the pair of electrode lead tabs are all wound up to form the capacitor, each electrode lead tab having a filmy flexible tab main body to be in contact with the electrode foil and a terminal strap being integrally formed with the tab main body and extending generally perpendicular to the winding direction of the capacitor, the tab main body having a plurality of rifts, which form small movable chips being defined by round U-shaped cut lines.

4,486,811

ELECTROSTATIC PROXIMITY SWITCH

Fumio Kamiya, Kyoto, and Hisatoshi Nodera, Kusatsu, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed May 31, 1983, Ser. No. 499,731
Claims priority, application Japan, May 31, 1982, 57-80132[U]
Int. Cl.³ H01G 7/00
U.S. Cl. 361—280 4 Claims



1. An electrostatic proximity switch comprising:

A detecting electrode, a screen electrode which covers the rear of said detecting electrode and an electric circuit which detects capacity variation between said detecting electrode and the earth, are all provided in a plastic case; and

said detecting electrode is composed of a single metal plate and insulating type spacers are placed locally between the detecting electrode and said screen electrode.

4,486,812

CAPACITIVE PRESSURE TRANSDUCER

J. N. M. de Jong, Westford, and R. L. Earle, Mendon, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,750
Int. Cl.³ H01G 7/00; G01L 19/04
U.S. Cl. 361—283 5 Claims

1. A rigid plate capacitor element for use in a variable capacitance pressure transducer of the type having a diaphragm with a pressure responsive flexible center portion serving as a second capacitor plate, said improved rigid plate element comprising:

a disk-like base member having a protuberant center portion on one face dimensioned to cooperate with said flexible center portion of said diaphragm to form a variable capacitor said protuberant center portion being a flat-topped mesa-like structure having a face at a height above and parallel to said one face of said rigid plate; and

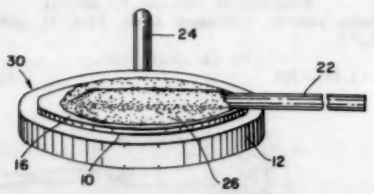
a plurality of pedestals having heights equal to said height of said flat-top of said mesa-like structure for supporting said rigid plate in a plane parallel to and at a specified distance from said diaphragm.

4,486,813

CERAMIC CAPACITOR WITH NICKEL TERMINATIONS

John P. Maher, Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Division of Ser. No. 280,044, Jul. 6, 1981, Pat. No. 4,425,378.
This application Dec. 12, 1983, Ser. No. 560,690
Int. Cl.³ H01G 4/10; H01B 1/02; B05D 1/04
U.S. Cl. 361—321 6 Claims



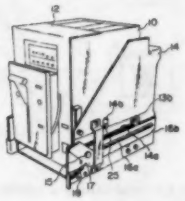
1. A ceramic capacitor comprising a dielectric ceramic body; one and another film of an electroless-nickel-activator composition being directly deposited onto one and another separate portions of the surface of said ceramic body, said activator composition consisting essentially of palladium, zinc, and silicon having at least half as much by silicon as palladium and at least 1.3 times as much zinc as silicon, all by weight; and two termination layers of nickel, respectively, overlying and conforming to said one and another activator films.

4,486,814

DRAWER-TYPE CIRCUIT BREAKER

Takayoshi Ishikawa; Yasushi Genba; Shigemi Tamaru, and Kiyoshi Eguchi, all of Hiroshima, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 368,065, Apr. 13, 1982, Pat. No. 4,412,112.
This application Aug. 22, 1983, Ser. No. 515,724
Claims priority, application Japan, Apr. 14, 1981, 56-54081[U]; Apr. 14, 1981, 56-54082[U]
Int. Cl.³ H02B 11/12
U.S. Cl. 361—339 3 Claims



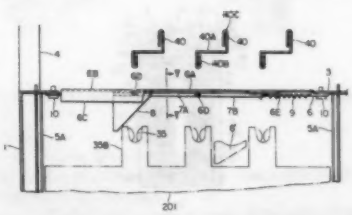
2. A drawer-type circuit breaker comprising housing means, circuit breaker means having roller means thereon for moveably supporting said circuit breaker means within said housing means, extendable support rail means on said housing means for supporting said circuit breaker means through said roller means outside of said housing means and latch means pivotally mounted on said housing means for engagement with said roller means and support rail means to initially prevent extension of said support rail means when said circuit breaker means is in a first position within said housing means and operable by said roller means upon movement of said circuit breaker means to a second position within said housing means to allow extension of said support rail means while preventing further outward movement of said circuit breaker means until said support rail means are fully extended whereupon said latch means is further operable by said roller means to permit further outward movement of said circuit breaker means.

4,486,815

SHUTTER DEVICE FOR CONTROL UNIT OF CONTROL CENTER

Masaru Takahashi, Gifu, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1983, Ser. No. 486,969
Claims priority, application Japan, Apr. 20, 1982, 57-65850
Int. Cl.³ H02B 1/14
U.S. Cl. 361—345 14 Claims



1. A shutter device for a control unit of a control center comprising a box member, a set of vertical buses disposed on a central portion of said box member, at least one control unit including a protruding connector disposed on a rear surface thereof, and removably accommodated within said box member to be connected to said set of vertical buses in a plug-in

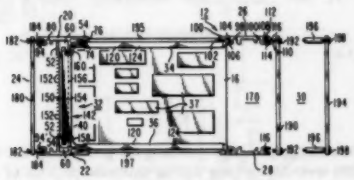
manner, and protective barrier means disposed in front of said set of vertical buses, and including opening means through which said protruding connector can extend, said shutter device comprising a shutter plate including opening means corresponding in size to said opening means on said protective barrier means, said shutter plate being slidably disposed on a front surface of said protective barrier means to cause said two opening means to oppose to each other, energizing means disposed on said shutter plate to normally impart to said shutter plate a force of motion in a predetermined direction to close said opening means on said protective barrier means, and a cam disposed on a front surface of said shutter plate, and directly driven by an extremity of said protruding connector following the insertion of said control unit within said box member, the engagement of said cam with said protruding connector causing said shutter plate to be moved to open said opening means on said protective barrier.

4,486,816

HOUSING FOR RECEIVING AND STORING PRINTED CIRCUIT BOARDS

George P. Hope, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,661
Int. Cl.³ H05K 7/14
U.S. Cl. 361—399 **17 Claims**



1. A housing for securing and storing at least one printed circuit board, comprising:

a first pair of like interconnect elements, said elements having like first channels and like second channels, said channels extending generally parallel to each other along the length of said elements;

a second pair of like interconnect elements, said second pair of elements having like third channels extending along their length;

means coupled to said first and second pair of elements for securing all of the elements in spaced relation and forming an assembly therewith, said first pair of elements being parallel spaced with said first channels facing each other and generally at one end of said assembly and said second pair of elements being parallel spaced and generally at an end opposite said one end, with a first of said first pair of elements generally coplanar with a first of said second pair of elements and a second of said first pair of elements generally coplanar with a second of said pair of elements, and with said second channels of said first pair of elements facing said third channels;

guide means including means dimensioned for slidably receiving said printed circuit board, said guide means including first tab means engaged in said second and third channels for securing the guide means to said elements; and

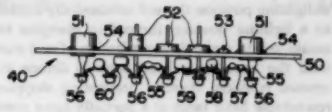
backplane means including at least one printed circuit board connector adapted to engage said received printed circuit board, and a printed circuit board attached to the one connector, said connector including second tab means dimensioned to frictionally engage said first elements in said first channels to align the connector and printed circuit board along said first channels relative to said guide means.

4,486,817

METHOD OF MANUFACTURING AN ELECTRICAL CIRCUIT WIRING ARRANGEMENT

Kazuaki Matsumura, and Seiki Nakanishi, both of Shiga, Japan, assignors to NEC Kansai, Ltd., Otsu, Japan

Filed Aug. 19, 1982, Ser. No. 409,514
Claims priority, application Japan, Aug. 11, 1979, 54-102519
Int. Cl.³ H05K 7/04
U.S. Cl. 361—424 **4 Claims**



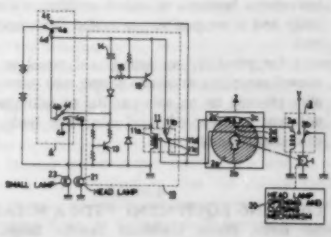
1. An electrical circuit wiring arrangement, comprising chassis base means (11) having through-holes, a plurality of first circuit elements (12) carried on said chassis base means and provided with stiff leads (13), a plurality of second circuit elements (24) provided with thin leads (25), and a plurality of eyelet terminals (22) connecting said stiff leads (13) of said first circuit elements (12) and said thin leads (25) of said second circuit elements (24) electrically and mechanically, wherein each of said eyelet terminals forms a soldered junction for connection at the inside of said eyelet terminal, and wherein said eyelet terminals are exclusively secured to said stiff leads and to said thin leads so that said stiff leads of said first circuit elements form the only indirect mechanical connection between the eyelet terminals and said chassis base thereby avoiding any direct mechanical connection between the eyelet terminals and said chassis base.

4,486,818

APPARATUS FOR CONTROLLING OPENING AND CLOSING OF A RETRACTABLE HEAD LAMP FOR AN AUTOMOBILE

Kenshiro Hashimoto, Mitaka; Kunio Okazaki, Hadano; Toru Tanabe, and Toshio Koguro, both of Yokohama, all of Japan, assignors to Honda Motor Co., Ltd. and Stanley Electric Co., Ltd., both of Tokyo, Japan

Filed Aug. 16, 1983, Ser. No. 524,127
Claims priority, application Japan, Aug. 27, 1982, 57-148602
Int. Cl.³ B60Q 1/06
U.S. Cl. 362—65 **8 Claims**



1. In apparatus for opening and closing a retractable head lamp comprising a retractable head lamp; motor means coupled to said retractable head lamp for opening and closing said retractable head lamp; a hand switch for effecting lighting and unlighting of said head lamp and for initiating opening and closing movements of said head lamp; and detecting means coupled to said hand switch and to said motor means for detecting at least one desired position of said head lamp for selectively stopping energization of said motor means when said head lamp reaches said at least one desired position, the improvement comprising:

control means interposed between said hand switch and said detecting means, said control means including:

means responsive to operation of said hand switch from a lighting position thereof substantially instantaneously to an unlighting position thereof to prevent energization of said motor means, thereby preventing said motor from instantaneously driving said retractable head lamp away from its fully open position; and

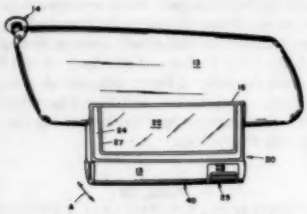
means responsive to operation of said hand switch from an unlighting position thereof substantially instantaneously to a lighting position thereof to energize said motor means and to maintain energization of said motor means until the retractable head lamp is driven to its fully opened position, thereby preventing stopping of said retractable head lamp at a partially open position.

4,486,819

VEHICLE VISOR LIGHTING APPARATUS

Konrad H. Marcus; Carl W. Flowerday, and Dennis J. Fleming, all of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Oct. 3, 1983, Ser. No. 538,569
Int. Cl.³ F21V *33/00*
U.S. Cl. 362—142 **58 Claims**



1. An automotive visor comprising:

a visor body including slot means formed along a lower edge thereof and extending within said visor body for receiving a slide-out panel;

means for mounting said visor body to a vehicle for movement between a raised stored position and a lowered use position;

a panel shaped to fit within said slot of said visor body;

means for slidably mounting said panel to said visor body for movement between a stored position within said visor body and a use position extended from said visor body; and

means for pivotally mounting said panel to said second named mounting means to permit said panel to be adjustably pivoted on an axis parallel to said visor body and adjacent a lower edge of said visor body when in an extended position.

4,486,820

LIGHTING EQUIPMENT WITH A SOLAR CELL

Yasushi Baba, Ikeda; Hirofumi Tezuka, Shiga, and Kohzo Kitagawa, Yokaichi, all of Japan, assignors to Kyoto Ceramic Company Limited, Kyoto, Japan

Filed Jul. 16, 1981, Ser. No. 283,823
Claims priority, application Japan, Jul. 16, 1980, 55-100503
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—183 **6 Claims**

1. An outdoor lighting equipment to light a lamp with the power source obtained from a solar cell provided therein, the outdoor lighting equipment comprising:

a battery for storing the electric energy converted from solar energy by said solar cell;

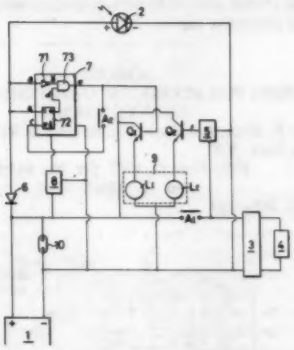
a first circuit connecting between said battery and said solar cell so as to charge up said battery under a potential difference therebetween;

a second circuit allowing a current to flow from said battery to light said lamp;

a power switch for opening and closing the path of said current from said battery to said lamp;

a logical operation circuit adapted to produce a sunset signal in response to a voltage drop taking place in said solar cell because of the shortage of sunlight;

a timer adapted to set a period of time during which said current from said battery to said lamp is kept flowing, said timer being driven by said current, and outputting a switching-off signal to make said power switch turn off at the expiration of said period of time; and



overdischarge preventing means for preventing the battery from overdischarging during extended periods of cloudy weather comprising a voltage drop detector for detecting a drop in the terminal voltage of said battery below a predetermined value and providing a low voltage signal in response to said detection, whereby said battery is protected against becoming overdischarged by supplying a current beyond its capacity;

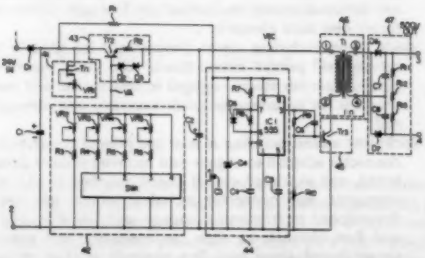
control means for turning on said power switch in response to said sunset signal and turning off said power switch in response to said switching off signal or said low voltage signal.

4,486,821

POWER SOURCE FOR A DEVELOPING BIAS

Haruo Itakura, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1982, Ser. No. 398,890
Claims priority, application Japan, Jul. 22, 1981, 56-115551
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—18 **3 Claims**



1. In a copying machine having a power source for control-

ling a bias voltage to be supplied to a developing device, an improved power source comprising:

(a) an input power source,

(b) a standard voltage generating means, including change-over switch means for selecting a desired standard voltage from a set of standard voltages, and a constant current generating section for providing a direct current at the selected standard voltage employing said input power source,

(c) a pulse transformer on which said standard voltage generated by said standard voltage generating means is impressed as a direct current voltage through said constant current generating section,

(e) a clock pulse generating means which generates clock pulses with a fixed cycle and fixed duty ratio, and

(f) a switching means driven by clock pulses generated by said clock pulse generating means for switching said pulse transformer to provide a stable high voltage output.

4,486,822

SWITCHED-MODE SELF OSCILLATING SUPPLY VOLTAGE CIRCUIT

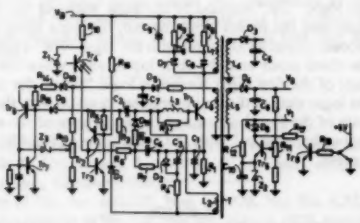
Antonius Marinus, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 24, 1983, Ser. No. 460,417

Claims priority, application Netherlands, Feb. 17, 1982, 8200616

Int. Cl.³ H02P *13/22*

U.S. Cl. 363—19 **4 Claims**



1. A switched-mode self-oscillating supply voltage circuit for converting an input voltage into an output d.c. voltage which is substantially independent of variations of the input voltage and/or of a load connected to the terminals of the output voltage, comprising a transformer having a primary and a feedback winding, a first controllable switch connected in series with the primary winding, the series arrangement thus formed being coupled between terminals for the input voltage, a second controllable switch coupled via a turn-off capacitor to the control electrode of the first switch to turn it off, means coupling the feedback winding to said control electrode, a transformer winding being coupled via a rectifier to an output capacitor having terminals which supply the output voltage, an output voltage-dependent control voltage being present on a control electrode of the second switch for controlling the conduction period of the first switch, the circuit being switchable between an operating state and a stand-by state in which relative to the operating state the supply energy supplied to the load is considerably reduced, a starting network connected to a terminal for the input voltage, means for adjusting the control voltage in the stand-by state to a value at which the first controllable switch is cut-off, a connection which carries current during the conduction period for the second controllable switch being provided between the starting network and said second switch, and means providing a connection between the starting network and the control electrode of the first switch, which connection does not carry current in the stand-by state.

4,486,823

CIRCUIT FOR CONVERTING AN INPUT D.C. VOLTAGE INTO AN OUTPUT D.C. VOLTAGE

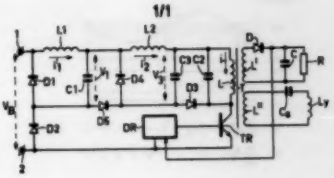
Erich J. Palm, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1982, Ser. No. 434,981

Claims priority, application Netherlands, Nov. 16, 1981, 8105160

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—21 **2 Claims**



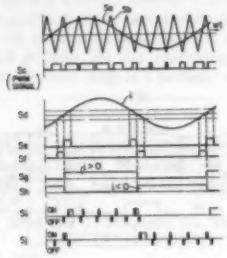
1. A circuit for converting an input d.c. voltage into an output d.c. voltage which is substantially independent of variations of the input voltage and/or variations of a load connected to the output voltage and comprising a first supply network having a first diode connected to a first terminal for the input voltage and a second diode connected to a second terminal for the input voltage; the first and second diodes being arranged in series with the same conductivity direction, said first supply network also having a series network formed by an inductor and a storage capacitor arranged in parallel with the first diode; the circuit further comprising a winding one end of which is coupled to the junction between the inductor and the storage capacitor and the other end to an electrode of a controllable switch, the other electrode of the switch being connected to the second terminal for the input voltage while a further diode is coupled by one electrode to the junction between the first and second diodes and by means of its other electrode to the junction between the winding and the switch; this further diode having the same conductivity direction as the switch and the winding being part of a resonant network which also comprises a tuning capacitor; a rectifier and load being coupled to the storage capacitor for producing the output voltage, and wherein in operation a saw-tooth-shaped current flowing through the winding while energy is stored in the inductor for replenishing losses and the conductive periods of the switch depend on the output voltage or a voltage proportional thereto; characterized in that the circuit further comprises one or more additional supply networks each having a first and a second diode, an inductor and a storage capacitor, which first and second diodes are arranged in series with the same conductivity direction in parallel with the storage capacitor of the preceding supply network and the inductor and the capacitor of each additional supply network forming a series network which is arranged in parallel with its first diode; the end of the winding which is not connected to the controllable switch being coupled to the junction between the inductor and the capacitor of the additional supply network remote from the input voltage terminals, while the electrode of the further diode which is not connected to the switch is connected to the junction between the first and the second diodes of the additional supply network remote from the input voltage terminals.

4,486,824

PWM CONVERTER WITH CONTROL CIRCUIT RESPONSIVE TO MINIMUM HOLDING CURRENT

Toshiaki Okuyama, Ibaraki; Yuzuru Kubota, and Hiroshi Nagase, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 10, 1982, Ser. No. 356,923
Claims priority, application Japan, Mar. 11, 1981, 56-33940
Int. Cl.³ H02M 7/515
U.S. Cl. 363—41 16 Claims



1. A method for controlling a PWM converter wherein PWM signals are applied to gates of gate turn-off thyristors of the converter as on-gate signals thereto to convert power, comprising the steps of:

detecting a current at an A.C. part of said converter;

producing said gate signals to turn on and off said gate turn-off thyristors in accordance with a polarity of the detected current;

said gate signals being short duration pulses; and

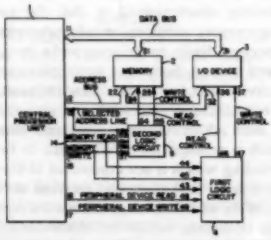
said on-gate signals of said gate signals in the periods in which said detected signal is below a holding current level required to maintain said gate turn-off thyristors on being longer duration pulses for maintaining the on states of said gate turn-off thyristors.

4,486,825

CIRCUIT ARRANGEMENT FOR EXTENDED ADDRESSING OF A MICROPROCESSOR SYSTEM

Iván Adonyi, Pécs; Endre Farkas, Budapest; Gyula Hegedüs, Baja; Attila Körmendy, Budapest; Istvánné Mogyorósi, Budapest; Géza Molnár, Budapest; Szilárd Sass, Budapest; László Schöller, Budapest; Lajos Takács, Budapest, and György Vitéz, Budapest, all of Hungary, assignors to Telefongyar

PCT No. PCT/HU81/00001, § 371 Date Sep. 15, 1981, § 102(e) Date Sep. 15, 1981, PCT Pub. No. WO81/02071, PCT Pub. Date Jul. 23, 1981
PCT Filed Jan. 12, 1981, Ser. No. 305,627
Claims priority, application Hungary, Jan. 17, 1980, 83/80
Int. Cl.³ G06F 13/00
U.S. Cl. 364—200 2 Claims



1. A microprocessor system comprising:

a microprocessor forming a central processor unit and provided with control outputs for memory read, memory write, peripheral device read and peripheral device write;

a memory;

a peripheral device provided with read and write control inputs, connected to said microprocessor via a data bus, an address bus and a control bus;

said microprocessor system including a first combination logic circuit provided with a first input, a second input, a third input, a fourth input and a fifth input, a first output and a second output;

the memory read control output of said microprocessor being connected to the second input of said first combination logic circuit and operatively connected to a read control input of said memory, the memory write control output of said microprocessor being connected to the third input of said first combination logic circuit and operatively connected to write control input of said memory, the peripheral device read control output of said microprocessor being connected to the fourth input of said first combination logic circuit, the peripheral device write control output of said microprocessor being connected to the fifth input of said combination logic circuit;

at least one selected address bus line from among the output address bus lines of said microprocessor being connected to the first input of the first combination logic circuit;

the first output of the first combination logic circuit being connected to the read control input of said peripheral device, the second output thereof being connected to the write control output of the peripheral device; and

the first combination logic circuit including in the case when the logic state of the first input thereof is "true", means for making the logic state of the first output be identical with the logic "OR"-relation of the logic states of the second input and the fourth input thereof, the logic states of the second output be identical with the logic "OR"-relation of the third input and the fifth input, and, when the logic state of the first input thereof is logic "false", for making the logic state of the first output be identical with the logic state of the fourth input and the logic state of the second output be identical with the logic state of the fifth input thereof.

4,486,826

COMPUTER PERIPHERAL CONTROL APPARATUS

Kenneth T. Wolff, Medway; Joseph E. Samson, Dover, and Kurt F. Baty, Medway, all of Mass., assignors to Stratus Computer, Inc., Natick, Mass.

Filed Oct. 1, 1981, Ser. No. 307,524
Int. Cl.³ G06F 15/16, 15/06
U.S. Cl. 364—200 9 Claims

1. Peripheral control apparatus for connection with a computer bus structure for the transfer of data between one or more computer functional units connected to that bus structure and at least one computer peripheral device connected with the control apparatus, where each functional unit is any of a central processing unit, a memory unit, and another peripheral control unit, and where the bus structure includes first and second duplicative buses, said apparatus having the improvement comprising

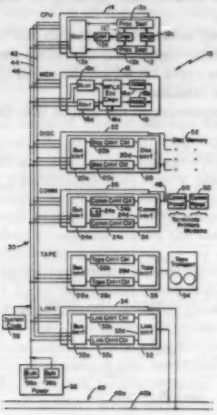
A. input means for receiving signals from any of said other functional units by way of any of said first and second buses and being conditioned by an applied control signal input thereto from said bus structure for responding to such signals on only a single one of said first and second buses,

B. bus output means for applying signals, for transfer to any of said other functional units, identically to both of said first and second buses independent of the conditioning of said input means,

C. device output means for connection to the peripheral device,

D. first and second device control means, each of which is connected with said input means to receive signals from

said bus structure and is arranged for providing identical operations in response to said received signals and for producing output signals in response to said operations, and at least said first of which is arranged to apply output signals to said bus output means and to apply further output signals to said device output means, and



E. first fault-detecting means for detecting a first selected fault condition at least in signals transferred with respect to said device control means and responding to such a detected fault-condition to disable said bus output means from applying signals to either of said first and second buses.

4,486,827

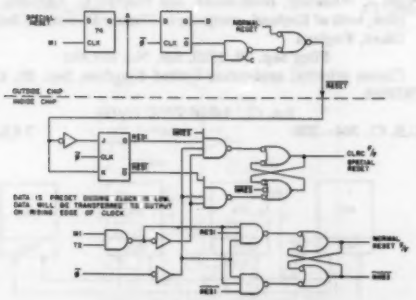
MICROPROCESSOR APPARATUS

Masatoshi Shima, Santa Clara; Federico Faggin, Cupertino, and Ralph K. Ungermann, Los Altos, all of Calif., assignors to Zilog, Inc., Campbell, Calif.

Division of Ser. No. 092,827, Nov. 9, 1979, Pat. No. 4,332,008, which is a division of Ser. No. 665,228, Mar. 9, 1976, abandoned. This application Jan. 18, 1982, Ser. No. 340,470

Int. Cl.³ G06F *9/00*

U.S. Cl. 364—200 **7 Claims**



1. In a microprocessor product development system having a central processing unit and memory connected to a common bus, apparatus for using said central processor unit in both a user mode and a monitor mode while saving the user mode system state when switching to the monitor mode, comprising:

said central processor unit including address bus terminals connected to said common bus a plurality of digital logic device means, a first program counter means for storing the program address of a location of said memory, and means responsive to a clock signal for connecting the value of said program counter to said address bus terminals, and

said central processor unit means further including means for resetting said first program counter means and said plurality of digital logic device means in response to a reset signal and for resetting only said first program counter means in response to a special reset signal having a different detectable characteristic from said reset signal, whereby the user mode system state is saved when said special reset signal is applied to the central processor unit to switch the system from the user mode to the monitor mode.

4,486,828

DATA PROCESSING SYSTEM PROVIDING DATA SECURITY THROUGH CODED IDENTIFICATION OF ACCESSING TERMINALS

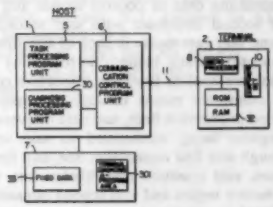
Junji Kitamura; Fumiya Murata, and Noboru Nakamura, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 18, 1982, Ser. No. 349,814

Claims priority, application Japan, Feb. 20, 1981, 56-23028

Int. Cl.³ G06F *3/04;* H04L *9/00*

U.S. Cl. 364—200 **5 Claims**



1. A data processing system including a host unit and a plurality of terminals connected to said host unit;

said host unit comprising designation means for designating a selected arithmetic operation, means for transmitting the designation of said selected arithmetic operation to a given terminal, and checking means for checking the result of the arithmetic operation designated by said designation means and executed in the given terminal;

said terminals each comprising first memory means for storing therein information for identifying the respective terminal, a processor responsive to the designation of said selected arithmetic operation received from said designation means in said host unit for executing the arithmetic operation on the identifying information stored in said first memory means and means for transmitting the result of the arithmetic operation to said host unit; and

said checking means including means for receiving said result of said executed arithmetic operation from said given terminal and means for determining whether or not said result of the arithmetic operation received from said given terminal corresponds to an expected value.

4,486,829

METHOD AND APPARATUS FOR DETECTING A FAULTY COMPUTER IN A MULTICOMPUTER SYSTEM

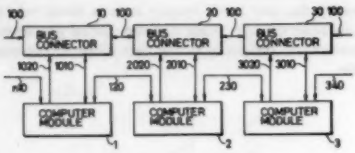
Kinji Mori, Kawasaki, Japan, and Hirokazu Ihara, Machida, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 31, 1982, Ser. No. 363,841

Claims priority, application Japan, Apr. 3, 1981, 56-49315

Int. Cl.³ G06F *11/20*

U.S. Cl. 364—200 **9 Claims**



1. A multicomputer system comprising:

(a) first and second computers, each of which includes a processor for controlling transmission and reception of data, and a memory for storing data received and to be transmitted;

(b) a common transmission bus;

(c) first and second bus connector means, which are respectively connected to one of said first and second computers and to said common transmission bus and each of which includes gate means for selectively passing a signal to the corresponding computer from said common transmission bus and a signal to be delivered from said corresponding computer to said common transmission bus;

(d) means including at least one first connection line for transmitting data or control signals and which connects said first computer with said first bus connector means;

(e) means including at least one second connection line for transmitting data or control signals and which connects said second computer with said second bus connector means, said gate means in each of said first and second bus connector means being controlled by control signals which are applied from the respective computers to said bus connector means through the respective first and second connection lines, and data delivered from said first computer being transmitted to said second computer through said first connection line, said first bus connector means, said common transmission bus, said second bus connector means and said second connection line;

(f) a third connection line which connects said first computer with said second computer; and

(g) means for transmitting a signal for checking the operative condition of said first and second computers along a closed loop which includes said first computer, said third connection line, said second computer, said second connection line, said second bus connector means, said common transmission bus, said first bus connector means and said first connection line.

4,486,830

PROGRAMMABLE CONTROL APPARATUS AND METHOD

Ralph C. Taylor, Jr., and Christopher L. Vaniglia, both of West Chester, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Mar. 30, 1982, Ser. No. 363,510

Int. Cl.³ G05B *19/02*

U.S. Cl. 364—146 **19 Claims**

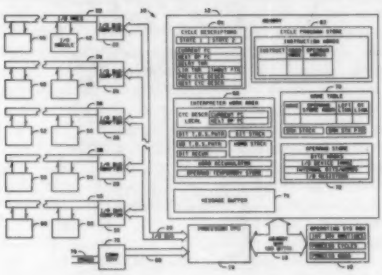
1. Apparatus for controlling the operation of a system in response to a program of operation including a plurality of instruction sequences defining mechanism cycles of operation, the instructions relating sensed conditions of input devices, selectable conditions of output devices, and variable values, and the input and output device conditions being represented by unique interface signals, the apparatus comprising:

(a) means for storing a plurality of instructions signals representing the mechanism cycles of operation;

(b) means for storing mechanism cycle status signals, each status signal respresenting the executability of the sequence of instructions defining a mechanism cycle of operation;

(c) processing means responsive to the instruction signals, and the status signals for executing the instructions of a mechanism cycle for which the status signal represents an executable condition;

(d) means responsive to the unique interface signals and the



processing means for altering the condition of a selected unique interface signal associated with an output device, thereby controlling the output device in accordance with the current condition of selected input devices in the stored program;

(e) communication means for exchanging message signals with a data communication device; and

(f) means responsive to the status signals and the message signals for selectively adding, deleting, and modifying a mechanism cycle for which the status signal represents a non-executable condition of a mechanism cycle, the adding, deleting, and modifying of the nonexecutable mechanism cycle being effected concurrently with execution of instructions of executable mechanism cycles.

4,486,831

MULTI-PROGRAMMING DATA PROCESSING SYSTEM PROCESS SUSPENSION

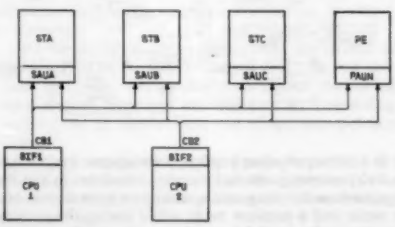
Nigel J. Wheatley, Broadstone, and Martyn P. Andrews, Taplow, both of England, assignors to Plessey Overseas Limited, Ilford, England

Filed Sep. 29, 1980, Ser. No. 191,841

Claims priority, application United Kingdom, Sep. 29, 1979, 7933856

Int. Cl.³ G06F *9/18, 11/00*

U.S. Cl. 364—200 **7 Claims**



1. A multi-user data processing system including a processor module for executing a plurality of processes which perform nested subroutines, each of said plurality of processes being

provided with a discrete process dump-stack having a fixed area of storage elements for the storage of the content of machine registers and indicators when the process is suspended; and a variable area of storage elements for the storage of a link for each nested subroutine performed by the process, each link including (i) an instruction address to which a process is to return when the nested subroutine is to be recommenced; and (ii) a pointer to a code block of the nested subroutine wherein said code block defines the instructions of the nested subroutine, said processes capable of generating a request local store instruction, the improvement comprising:

means in said processor module for executing said request local store instruction;

in a link of said variable area of storage elements of said process dump-stack, an indicator defining the size and contents of a remainder of the link and a block of local storage area which is divided into a plurality of local storage segments, said local storage segments being used for local storage of information pertaining to said nested subroutine when suspended during the execution of said request local store instruction;

said processor module including a local store stack pointer register and a local store clear count register, said local store stack pointer register containing the starting address of a free area in the local storage segment and said local store clear count register containing the available size of an area in a local store block free for storage, the contents of said local store stack pointer register and said local store clear count register being altered by said processor module, the registers being affected by the allocation of said local storage segments during the execution of said request local store instruction; and

said processor module further including means to access said local store stack pointer register and local store clear count register and including means for generating local capability descriptor information for storage in the variable portion of the process dump-stack during the execution of said request local store instruction.

4,486,832

SEQUENTIAL PROGRAM CONTROL SYSTEM

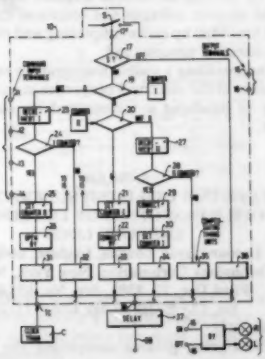
Georg Haubner, Berg, and Jürgen Wesemeyer, Nuremberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 020,227, Mar. 13, 1979, abandoned. This application Aug. 21, 1981, Ser. No. 294,986

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1978, 2812242

Int. Cl.³ G06F 9/00

U.S. Cl. 364—200 **4 Claims**



1. Sequential program control system combination comprising

a plurality of sequential separate program control units (10, 40, 39), each having a plurality of selectable paths (1 . . . 6) from a signal train input (TC) to a signal train output (18) which are selectively enabled, and in which different paths have different signal coursing time periods,

each of said separate control units responding to selectable command input data (11–14; 17') addressing at least one of a selected path in said units,

said units providing outputs (15, 16) in accordance with selected command input data;

means for connecting the signal train output (18) of a first one (10) of the plurality of the separate units to the signal train input of a further one unit (40, 39) of said plurality of separate units to thereby connect said units in a serial chain and enable the further unit (40, 39) when a signal train output from the next preceding unit in the serial chain is received;

at least one common time delay element (37) connected in the serial chain connection of said first and further units, and adding a fixed time delay to the signals coursing in said respective paths, which fixed delay is substantially longer than the longest of any one of the signal coursing time periods through any one of said paths, to maintain approximately constant the overall coursing time of the signals through said series connection of the units regardless of the selected path of the signals in any one of the units;

means connecting the signal train output of the serial chain to the signal train input of said serial chain to connect the serial chain in a closed loop having a signal coursing time therein which is essentially independent of the selected signal paths in said units, thereby forming a closed loop serial chain; and

means (C) for applying cyclical signal trains to said closed loop serial chain.

4,486,833

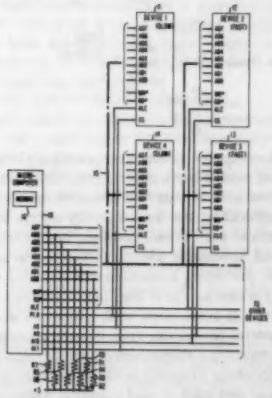
MICROPROCESSOR PERIPHERAL CONTROL CIRCUIT

Douglas S. Daudelin, Jackson, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 30, 1982, Ser. No. 428,874

Int. Cl.³ G06F 3/00

U.S. Cl. 364—200 **8 Claims**



1. The method of accessing peripheral devices from a microcomputer over pre-programmed leads where the access time of some of the devices is slower than the normal access instruction cycle time of the microcomputer, said method comprising the steps of

for certain of said devices applying, during a single instruction cycle of said microcomputer, to said pre-programmed

leads certain access control signals timed in accordance with the internal clock of said microcomputer, and

for other slower devices, applying to said pre-programmed leads, during a first microcomputer instruction cycle, a first subset of said certain access control signals, and applying to said pre-programmed leads, during subsequent microcomputer instruction cycles, other subsets of said access control signals.

4,486,834

MULTI-COMPUTER SYSTEM HAVING DUAL COMMON MEMORY

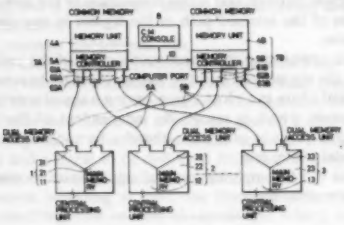
Yoshiki Kobayashi; Hideo Maejima; Tadaaki Bandoh, and Hiroaki Nakanishi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

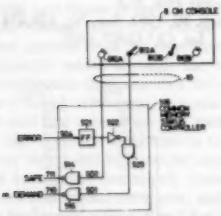
Continuation-in-part of Ser. No. 105,701, Dec. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 783,735, Apr. 1, 1977, abandoned. This application Apr. 14, 1983, Ser. No. 485,020

Claims priority, application Japan, Apr. 9, 1976, 51-39198

Int. Cl.³ G06F *13/00*; G11C *9/00*

U.S. Cl. 364—200 **7 Claims**





1. A multi-computer system comprising a plurality of computers each of which has a central processing unit and a dual memory access unit; at least two common memories; interface means for connecting the dual memory access units in all of said computers to each of said common memories; and maintenance demand appointing means connected to said common memories for providing a maintenance demand signal to the dual memory access unit in at least one of said computers when an error occurs in connection with a memory access; at least one of the central processing units including maintenance flag means for producing a maintenance program appointing signal when a maintenance program is to be executed in this central processing unit and each of said common memories having at least one status means for producing a status signal representing whether or not the common memory is in a normal operating condition; said dual memory access unit in each central processing unit including means responsive to said maintenance program appointing signal for restricting access by that central processing unit to the common memory selected by said maintenance demand signal and identified by a status signal representing that the common memory is not in a normal operating condition for executing a maintenance program in connection with that common memory.

4,486,835

APPARATUS AND TECHNIQUES FOR ELECTRIC TOMOGRAPHY

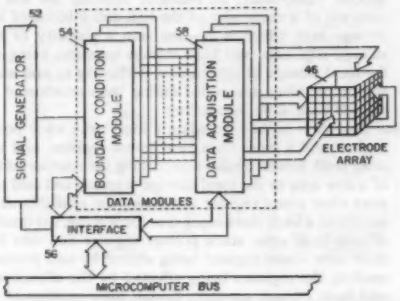
Dov Bai; Achi E. Brandt, and Bruce D. Sollish, all of Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Filed Jul. 24, 1981, Ser. No. 286,538

Claims priority, application Israel, May 13, 1981, 62861

Int. Cl.³ G06F *15/42*; A61B *5/04*

U.S. Cl. 364—414 **10 Claims**



1. Apparatus for use in electric tomography comprising:

a coupling medium for receiving an object to be examined;

a plurality of electrodes disposed in communication with said coupling medium and arranged in a three dimensional array generally surrounding the object to be examined;

multiplexing and measuring means for applying electric voltages at selected first pluralities of electrodes and simultaneously measuring electric currents including non-straight line currents at corresponding selected second pluralities of electrodes in a desired sequence;

computation means coupled to said multiplexing means for initially estimating the values of the electrical properties at a multiplicity of locations in the object to be examined, said locations being arranged in a three dimensional imaginary grid defined in the object to be examined and subsequently correcting the initially estimated values of the electrical properties at each of said multiplicity of locations by solving an inverse Laplace equation using the applied electric voltages and electrical current measurements provided by said multiplexing and measuring means by an iterative process; and

means for providing a visible tomographic representation of the values of the electrical properties at each of said multiplicity of locations as determined by said computation means.

4,486,836

WELL LOGGING: UTILIZING SUPERPOSITION OF STEP-PROFILE RESPONSES OF LOGGING TOOLS TO IMPROVE LOGS

Philippe J. Lacour-Gayet, London, England, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 22, 1981, Ser. No. 333,446

Int. Cl.³ E21B *49/00*; G06F *15/20*

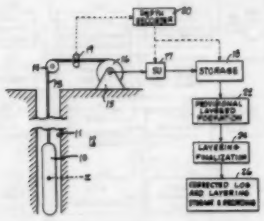
U.S. Cl. 364—422 **12 Claims**

1. A well logging process comprising the following machine-implemented steps:

deriving an original resistivity log produced by a resistivity tool passed through a borehole and exploring same with a sheet of current sent into the adjacent formation laterally of the borehole;

finding, from said resistivity log, provisional bed boundary depth levels and bed resistivities of a provisional layered formation traversed by the borehole, said provisional bed boundaries and bed resistivities defining a provisional layered formation traversed by the borehole;

producing, from said provisional boundary depth levels and bed resistivities, a provisional reconstructed resistivity log by linearly superposing respective known step profile responses of the tool to resistivity step profiles consistent with respective ones of said provisional boundaries and bed conductivities, wherein said step profile responses are



selected to produce an accurate reconstructed measurement at a selected intermediate part of a bed squeezed between two shoulder beds having resistivities significantly different from that of the squeezed bed;

matching the original log and the reconstructed log and refining the provisional bed resistivities and/or bed boundaries on the basis thereof until the match based on the most recent refinement meets selected criteria; and

producing a tangible representation of an improved resistivity log based on the most recent set of refined bed boundaries and bed resistivities.

4,486,837

APPARATUS FOR CONTROLLING OPERATION OF AUTOMOBILE AIR CONDITIONER

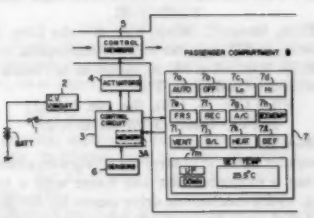
Yasuhumi Kojima, Gifu; Akiro Yoshimi, Kariya; Michihiko Kamiya, Handa; Fumio Ootsuka, Gifu, and Takeo Matsushima, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Feb. 12, 1982, Ser. No. 348,299

Claims priority, application Japan, Feb. 17, 1981, 56-22634

Int. Cl.³ G06F *15/20*; B60H *3/00*

U.S. Cl. 364—424 **3 Claims**



1. An apparatus for controlling the operation of an automobile air conditioner having a control member for controlling flow rate of air supplied into a passenger compartment of the automobile, comprising:

mode switch means including a plurality of switches, said plurality of switches including a first switch for sending a first signal to a memory means which represents setting of an automatic control mode, and a second switch for sending a second signal to said memory means which represents setting of a manual control mode;

a main switch of the automobile;

sensor means for sending a signal to an electric controlling means for varying the flow rate of air controlled by said control member;

memory means for receiving said first and second signals from said mode switch means and selectively and respectively memorizing first and second data in response thereto, and for memorizing said first data when said main switch is turned on; and

electric controlling means for controlling said control member to make the flow rate of air have a value corresponding to the signal from said sensor means when said first data is memorized in said memory means, and for controlling said control member to make the flow rate of air have a predetermined value when said second data is memorized in said memory means.

4,486,838

APPARATUS AND METHOD FOR ELECTRONIC CONTROL OF AUTOMATIC TRANSMISSION AVOIDING OVER-QUICK DOUBLE GEAR CHANGING

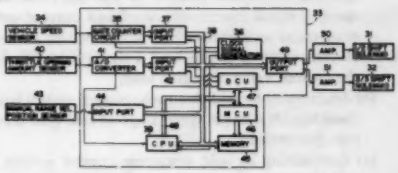
Hiroshi Itoh, and Motoki Endo, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jan. 21, 1982, Ser. No. 341,270

Claims priority, application Japan, Mar. 4, 1981, 56-31729

Int. Cl.³ G05D *17/02*; B60K *41/08*

U.S. Cl. 364—424.1 **30 Claims**



1. For an automatic transmission for a road vehicle with an engine, comprising a gear transmission mechanism, said gear transmission mechanism comprising a plurality of hydraulic fluid pressure activated friction engaging mechanisms and providing at least three forward speed stages according to selective supplying of actuating hydraulic fluid pressures to said friction engaging mechanisms:

a transmission control device, comprising:

(a) a speed sensor for detecting the current value of road speed and a load sensor for detecting the current value of engine load;

(b) an electrically actuated hydraulic fluid pressure control device which according to selective supplying of actuating electrical energy thereto provides said selective supplying of actuating hydraulic fluid pressures to said friction engaging mechanisms so as to engage any one of said at least three forward speed stages of said gear transmission mechanism and to provide an actual speed stage;

and

(c) an electronic control system, which repetitively receives from said speed sensor a signal representative of the current value of road speed and from said load sensor a signal representative of the current value of engine load, then based on these signals determines a target speed stage of said gear transmission mechanism, then determines a decided upon speed stage of said gear transmission mechanism, and then selectively supplies actuating electrical energy to said electrically actuated hydraulic fluid pressure control device to engage said decided upon speed stage of said gear transmission mechanism; said decided upon speed stage being deter-

mined so as to cause, when said actual speed stage and said target speed stage of said gear transmission mechanism differ by less than two speed stage steps, immediate shifting of the actual speed stage which is provided by the gear transmission mechanism to said target speed stage of said gear transmission mechanism; and said decided upon speed stage being also determined so as to cause, when said actual speed stage of said gear transmission mechanism and said target speed stage of said gear transmission mechanism differ by two or more speed stage steps, at least sometimes selectively shifting of said actual speed stage of said gear transmission mechanism which is provided by said gear transmission mechanism by steps of one speed stage at a time to said target speed stage of said gear transmission mechanism, said shifts by steps being separated in time by at least a predetermined time interval.

16. For an automatic transmission for a road vehicle with an engine, comprising a gear transmission mechanism, said gear transmission mechanism comprising a plurality of hydraulic fluid pressure activated friction engaging mechanisms and providing at least three forward speed stages according to selective supplying of actuating hydraulic fluid pressures to said friction engaging mechanisms;

a method of controlling said automatic transmission, comprising repetitively performing in the specified order the steps of:

(a) receiving into an electronic control system from a speed sensor which detects the current value of road speed a signal representative of said current value of road speed and from a load sensor which detects the current value of engine load a signal representative of the current value of engine load;

(b) determining by said electronic control system based on these signals a target speed stage of said gear transmission mechanism;

(c) determining by said electronic control system a decided upon speed stage of said gear transmission mechanism;

and

(d) selectively supplying by said electronic control system actuating electrical energy to an electrically actuated hydraulic fluid pressure control device which can provide said selective supplying of actuating hydraulic fluid pressures to said friction engaging mechanisms so as to engage any decided upon one of said at least three forward speed stages of said gear transmission mechanism according to said selective supplying of actuating electrical energy thereto, so as to engage said decided upon speed stage of said gear transmission mechanism and to provide an actual speed stage;

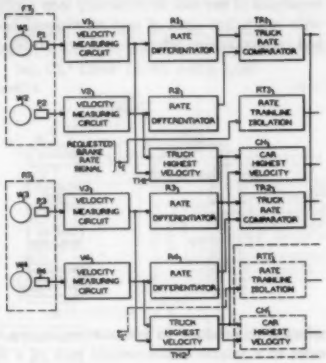
said decided upon speed stage being determined so as to cause, when said actual speed stage of said gear transmission mechanism and said target speed stage of sid gear transmission mechanism differ by less than two speed stage steps, immediate shifting of the actual speed stage which is provided by the gear transmission mechanism to said target speed stage of said gear transmission mechanism; and said decided upon speed stage being also determined so as to cause, when said actual speed stage of said gear transmission mechanism and said target speed stage of said gear transmission mechanism differ by two or more speed stage steps, at least sometimes shifting of said actual speed stage which is provided by said gear transmission mechanism by steps of one speed stage at a time to said target speed stage of said gear transmission mechanism, said shifts by steps being separated in time by at least a predetermined time interval.

4,486,839

SYNCHRONOUS WHEEL-SLIP PROTECTION SYSTEM

Richard J. Mazur, Pittsburgh, and James A. Wood, Versailles Boro, both of Pa., assignors to American Standard Inc., Wilmerding, Pa.

Filed Aug. 12, 1982, Ser. No. 407,522
Int. Cl.³ B60T 8/08
U.S. Cl. 364—426 **10 Claims**



1. A synchronous wheel-slip protection system comprising, means for producing signals representative of the velocity of each of the wheel axle units of each truck of a vehicle, means for differentiating the velocity signals to obtain rate signals, one means for comparing the rate signals of each truck, another means for comparing the truck rate signals of the vehicle, means for producing a signal representative of the desired rate of deceleration, means for determining a highest wheel velocity of the vehicle, means for differentiating the highest wheel velocity to obtain a highest wheel rate signal, means for comparing the highest wheel axle signal with the desired deceleration rate signal and for receiving an output from said other truck rate comparing means, and means for initiating a brake force reduction action on the wheel axle units of one of the trucks of the vehicle when the highest wheel rate signal is greater than the desired deceleration rate signal and the output of said other truck rate comparing means signifies that all of the wheel axle units of the vehicle are decelerating at substantially the same rate.

4,486,840

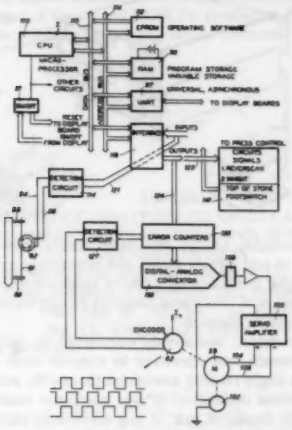
COMPUTER NUMERIC CONTROL FOR METAL FORMING

Dean A. Klein; Steven C. Davis, both of Lake City; Jerome J. Wroblewski, Red Wing; Otto Baade, Minneapolis, and Earl L. Hinrichs, St. Paul, all of Minn., assignors to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Filed Oct. 14, 1981, Ser. No. 311,427
Int. Cl.³ G06F 15/46; B21D 5/02
U.S. Cl. 364—474 **5 Claims**

1. A computer numeric control for a hydra-mechanical press brake having a moveable ram and frame with a backgauge comprising, hydra-mechanical drive means for driving a forming ram of said press brake, a settable upper limit switch for setting the upper limit of said ram, a lower limit switch for setting the lower limit of said ram, a ram position encoder connected to said frame, a pulley attached to said position encoder, a flexible member passing around said pulley and with its opposite ends attached to said ram so as to drive said encoder as said ram moves relative to said frame, a control station with a display, a keyboard and magnetic program receiving means, a computer connected to said control station to receive inputs from said ram position encoder, said keyboard and said magnetic program receiving means and supplying outputs to

said display and to said hydra-mechanical drive means for driving said forming ram, including operator switch means connected to said computer for controlling said forming ram, including a first detector circuit connected to said ram encoder and supplying an input to said computer, and wherein said ram encoder produces two out-of-phase A.C. signals when said ram moves, including a moveable backgauge mounted on said frame for establishing positions of bends in a workpiece, a backgauge driving means connected to said backgauge, and to said computer, a backgauge encoder connected to said frame and to said backgauge and connected to supply inputs to said computer and said computer connected to said backgauge driving means, wherein said backgauge encoder produces two



out-of-phase A.C. signals and an indexing signal, wherein said computer comprises first and second computer processing units which are interconnected together, including a first plurality of read only memories and a first plurality of random access memories connected to said first computer processing unit, including a second plurality of read only memories and a second plurality of random access memories connected to said second computer processing unit, wherein said ram encoder and said backgauge encoder are connected to said first computer processing unit, and wherein said magnetic program means comprises a magnetic tape playback connected to said second computer processing unit and said keyboard is connected to said second computer processing unit.

4,486,841

BENDING PRESS

Katsumi Koyama, Hiratsuka; Shigenori Kojima, Tokyo; Tsuneo Kogure, Hatano; Naoaki Itano, and Yoshihiko Ohashi, both of Machida, all of Japan, assignors to Amada Company, Limited, Japan

Filed Dec. 8, 1981, Ser. No. 328,601

Claims priority, application Japan, Dec. 9, 1980, 55-172571; Dec. 15, 1980, 55-177001; Dec. 15, 1980, 55-177002

Int. Cl.³ G06F *15/46*; B21D *5/02*

U.S. Cl. 364—474 **9 Claims**

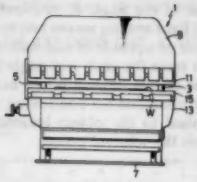
1. A method of making a V-shaped bend in a workpiece in presses, comprising the steps of:

computing a distance between an original measuring point within bending grooves in a lower tool and a bottom end of an upper tool by using as factors the thickness of the workpiece, bending angle of the workpiece, a radius formed at a shoulder portion of the bending grooves, a radius formed at the bottom end of the upper tool, and a width of the bending grooves;

making a V-shaped bend in a workpiece by bending operations;

computing compensation factors related to the bending forces present in the bending operations from the obtained distance;

computing a second distance between the original measuring point of the bending grooves and the bottom end of the upper tool; and



controlling a stroke length of a ram member when the lower tool is in engagement with the upper tool based on the second obtained distance.

4,486,842

APPARATUS AND PROCEDURE FOR LOCATING THREE-DIMENSIONAL OBJECTS PACKED IN BULK FOR PURPOSES OF CONTROLLING A GRIPPING TERMINAL

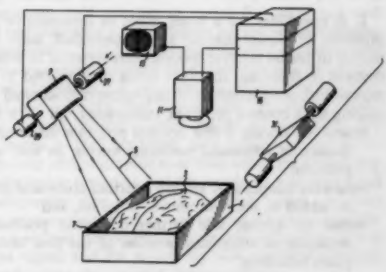
Jean-Paul Hermann, Massy, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Feb. 9, 1982, Ser. No. 347,080

Claims priority, application France, Feb. 12, 1981, 81 02747

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—513 **12 Claims**



1. An apparatus for locating three-dimensional objects in a bulk load in order to control a gripping terminal for selective moving of said gripping terminal to at least one of said objects, comprising:

at least one optical projection system for producing a substantially planar light bundle;

drive means coupled to said optical projection system for sweeping said light bundle across a predetermined surface area of said bulk load, whereby an irregular light trace of said light bundle on said bulk load is produced;

a central processing unit for controlling said drive means;

light sensing means located plumb with a predetermined surface of said bulk load for sensing said irregular light trace from said light bundle reflected off said bulk load and for producing output signals indicative of said irregular light trace;

said central processing unit comprising analysis and processing means coupled to the output signals of said light sensing means for processing said output signals;

said drive means comprising means for rotating said light bundle through a predetermined angle θ in plural prede-

termined increments spanning the predetermined surface area of the bulk load;

coder means for measuring the instantaneous value of said angle θ and for communicating said instantaneous value to said central processing unit; and

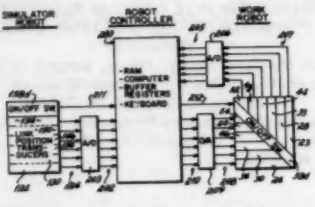
said central processing unit comprising means for analyzing, for each value of the angle θ, said irregular light trace sensed by said light sensing means and to define points (xi, yi, zi) indicative of a profile of said bulk load based on the irregular light trace for each said angle θ, and means for selecting those of said defined points corresponding to a predetermined condition for controlling movement of the gripping terminal to the object located at the selected points based on the selected points.

4,486,843

TRANSITIONAL COMMAND POSITION MODIFICATION FOR A CONTROLLER

Rolf T. Spongh, Waterloo, Belgium, and Jeffrey S. Noss, Bay Village, Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Mar. 3, 1982, Ser. No. 354,314
Int. Cl.³ G06F *15/46*; G05B *19/42*
U.S. Cl. 364—513 **8 Claims**



1. A controller for a work robot or manipulator having a plurality of power-driven, signal-controlled links interconnected to permit relative motion therebetween to define plural degrees of freedom, the links being manipulated to perform movements corresponding to sequences of command positions making up a control program, comprising, for each link:

means for storing a first control program made up of a sequence of command positions having an end command position;

means for temporarily storing a further command position to be added to the first control program; and

means for adding said further command position to the sequence of command position of the first control program including,

(a) means for producing a number of additional command positions such that the position change per command is substantially constant, the last position of said additional positions being substantially equal to said further command position, the additional command positions being added to the end of said sequence of command positions of the first control program, and

(b) means for storing said additional command positions at the end of said sequence of command positions of the first control program to form a second control program.

4,486,844

DUAL AXIS INCLINATION MEASURING APPARATUS AND METHOD

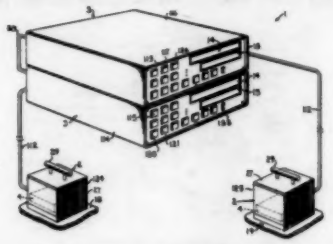
Amber N. Brunson; Deighton E. Brunson, both of Independence, and Walter W. Ray, Jr., Kansas City, all of Mo., assignors to Brunson Instrument Company, Kansas City, Mo.

Filed May 24, 1982, Ser. No. 381,546
Int. Cl.³ G01C *9/06*
U.S. Cl. 364—559 **22 Claims**

9. An apparatus for determining and indicating the inclination of a surface from horizontal comprising:

(a) a dual axis inclination sensing means for placement on a surface to determine the inclination thereof and operative to vary an electrical parameter in proportion to the degree of inclination of said sensing means about each of a pair of mutually perpendicular horizontal axes;

(b) circuit means having said sensing means connected thereto and operative to provide a pair of electrical signals, each signal having a signal property which varies in proportion to the variation of said electrical parameter upon inclination of said sensing means about a respective one of said horizontal axes;



(c) analog-to-digital (A/D) converter means operatively connected to said circuit means and converting each signal to a digital word having a binary value representative of the variation of said signal property of said signal from a reference value thereof;

(d) computer means operatively connected to said A/D converter means and operative to convert each digital word to an angle reading associated therewith; and

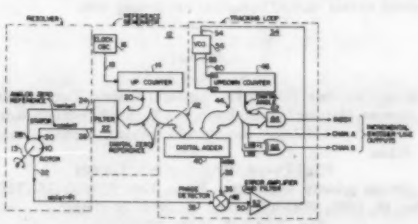
(e) display means connected to said computer means and operative to display a pair of angle readings equivalent respectively to the inclination of said sensing means about said horizontal axes.

4,486,845

RESOLVER TO INCREMENTAL SHAFT ENCODER CONVERTER

James J. Duckworth, Rockaway, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Jul. 23, 1982, Ser. No. 401,193
Int. Cl.³ H03K *13/02*
U.S. Cl. 364—559 **6 Claims**



1. A device for measuring shaft angle comprising:

a shaft driven resolver having a stator input and a rotor output;

reference signal generating means for generating a digital zero reference signal;

reference signal converting means for converting a digital zero reference signal to a corresponding analog zero reference signal which is connected to the stator's input resulting in a signal at the rotor output which is a sine waveform with a phase angle relative to the analog zero reference signal and equal to the mechanical angle of the resolver shaft;

loop means having inputs connected to the digital zero reference signal generating means and the rotor output for tracking the phase angle of the resolver output and producing a digital angle signal corresponding thereto, wherein the reference signal converting means comprises:

a first ROM storing a sine look-up table and connected at its input to the digital zero reference signal;

first digital-to-analog converting means connected to the output of the first ROM for producing a first analog zero reference signal as a sine function;

a second ROM storing a cosine look-up table and connected at its input to the digital zero reference signal; and

second digital-to-analog converting means connected to the output of the second ROM for producing a second analog zero reference signal as a cosine function.

4,486,846

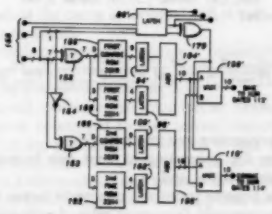
NUMERICALLY CONTROLLED OSCILLATOR USING QUADRANT REPLICATION AND FUNCTION DECOMPOSITION

Ronald D. McCallister, and Daniel Shearer, III, both of Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 28, 1982, Ser. No. 392,852

Int. Cl.³ G06F *15/32*; H03B *19/00*

U.S. Cl. 364—607 **17 Claims**



1. A function generator for generating generally sinusoidally shaped waves having a digitally controlled frequency comprising:

(a) coarse digital memory means, having an address input and an output, for storing a plurality of digital values coarsely defining one quadrant of a sinusoidal wave;

(b) fine digital memory means, having an address input and an output, for storing a plurality of digital values which when added to predetermined values stored in said coarse memory means substantially define the one quadrant of the sinusoidal wave;

(c) digital addition means connected to the outputs of said coarse and fine memory means for combining output values therefrom to substantially define the one quadrant of the sinusoidal wave;

(d) digital logic means connected to said addition means for shifting the combined output values to substantially define second, third and fourth quadrants of the sinusoidal wave in response to control signals supplied thereto; and

(e) address generating means having outputs connected to said coarse and fine memory means and to said logic means for addressing stored values in said coarse and fine memory means in a correct sequence to generate the one quadrant of the sinusoidal wave in the addition means and for supplying control signals to said logic means to generate a continuous sinusoidal wave.

4,486,847

WATCH PROVIDED WITH A MICROCOMPUTER

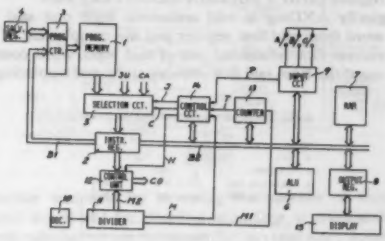
Jean P. Wattenhofer, Neuchatel, Switzerland, assignor to E.T.A., S.A. Fabriques d'Ebauches, Switzerland

Continuation of Ser. No. 232,577, Feb. 9, 1981,. This application Jan. 27, 1984, Ser. No. 577,121

Claims priority, application Switzerland, Feb. 12, 1980, 1127/80

Int. Cl.³ G06F *7/48, 15/02*

U.S. Cl. 364—705 **3 Claims**



1. A multifunction watch comprising means for producing a first and a second real time base signal, each comprising periodic pulses of a first frequency and a second frequency higher than said first frequency respectively, manually controllable means for producing a first and a second control signal, display means, and a microcomputer coupled to said real time base signal producing means, to said manually controllable means and to said display means, said microcomputer including a program memory for storing a program, controllable counting means and processing means responsive to said program for computing real time data in response to said periodic pulses of a first frequency, said processing means for supplying said computed real time data to said display means, said processing means responsive to said first control signal for actuating said counting means to start counting from zero said periodic pulses of a second frequency for producing a chronographic time base signal and a binary data signal, said processing means responsive to said second control signal for actuating said counting means to stop counting, said processing means responsive to said chronographic time base signal for computing first chronographic time data and for supplying said computed first chronographic time data to said display means, and said processing means responsive to said second control signal for computing a second chronographic time data according to said binary data signal and for supplying said computed second chronographic time data to said display means.

4,486,848

MICROPROCESSOR PARALLEL ADDITIVE EXECUTION OF A COMPUTER COUNT ONES INSTRUCTION

David G. Kaminski, Bloomington, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,523

Int. Cl.³ G06F *7/38*

U.S. Cl. 364—715 **6 Claims**

1. An iterative parallel additive method for counting the number of binary "1" bits within a data word of 2^N total bits received in a first register, said method comprising:

first storing as a first memory store (CONSTANT ROM) an indexable series of N total mask word constant quantities; and

second storing as a second memory store (SHIFT COUNT ROM) an indexable series of N total shift count constant quantities; and

initializing an index count in a counter (COUNTER) as the current index; then

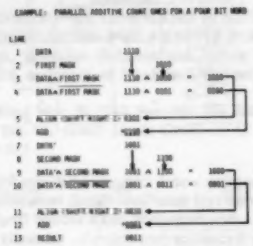
first referencing a current single one of said indexable series

of N total mask word constant quantities in accordance with said current index; and

second referencing a current single one of said indexable series of N total shift count constant quantities in accordance with said current index; then

logically ANDing in an arithmetic logic unit (ALU) said data word from said first register (DATA REGISTER) and said current first referenced one of said mask word constant quantities from said first memory store, and emplacing the first logical product result in a second register (SHIFT MATRIX REGISTER); then

logically ANDing in said arithmetic logic unit said data word from said first register and the complement of said current first referenced one of said mask word constant quantities from said first memory store, and emplacing the



second logical product result in said first register as said data word; and

shifting said first logical product result from said second register in a shift matrix (SHIFT MATRIX) in accordance with said current second referenced one of said shift count constant quantities; then

adding in said arithmetic logic unit said shifted first logical product result from said shift matrix with said data word from said first register, and emplacing the sum result in said first register as said data word; and

updating said current index contained in said counter; and

returning to said first referencing step and continuing until said updating step has been performed N times; then upon N performances of said updating step

stopping with said data word in said first register equalling said number of binary "1" bits within said data word.

4,486,849

COMPUTER FOR CALCULATING COMPOUND INTEREST

Isao Harigaya, Yokohama, and Akihiro Yamataka, Funabashi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 190,407, Sep. 24, 1980, abandoned, which is a division of Ser. No. 6,751, Jan. 26, 1979, Pat. No. 4,276,606, which is a division of Ser. No. 777,828, Mar. 15, 1977, Pat. No. 4,149,261. This application Sep. 28, 1982, Ser. No. 426,078

Claims priority, application Japan, Mar. 19, 1976, 51-30488; Mar. 23, 1976, 51-31862; Apr. 26, 1976, 51-45711

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—715 **8 Claims**

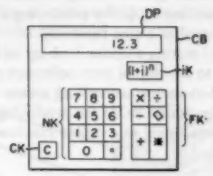
1. A computer comprising:

a keyboard including an instruction key for instructing the initiation of a compound interest computation, and including a plurality of numeric keys for entering numeric data into the computer;

memory means responsive to first and second operations of said instruction key for respectively storing first status information and second status information;

first controlling means coupled to said memory means for processing numeric data representing an interest rate i which is entered into the computer through said numeric keys as a result of storing said first status information in said memory means;

second controlling means coupled to said memory means for processing numeric data representing a time period n which is entered into the computer through said numeric keys as a result of storing said second status information in said memory means; and



means for controlling the execution of said compound interest computation in accordance with the term $(1+i)^n$ utilizing said numeric data representative of said interest rate and said numeric data representative of said timer period processed respectively by said first and second controlling means.

4,486,850

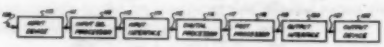
INCREMENTAL DIGITAL FILTER

Gilbert P. Hyatt, 4592 Amberwood, La Palma, Calif. 90623

Continuation-in-part of Ser. No. 522,559, Nov. 11, 1974, , and a continuation-in-part of Ser. No. 550,231, Feb. 14, 1975,. This application Dec. 27, 1976, Ser. No. 754,660

Int. Cl.³ G06F *15/34*; G06J *1/00*

U.S. Cl. 364—747 **39 Claims**



1. A data processing system comprising:

input means for generating at least one incremental time related input signal and

incremental Fourier transform processor means for generating an incremental frequency related processed signal in response to the incremental time related input signal.

4,486,851

INCREMENTING/DECREMENTING CIRCUIT AS FOR A FIR FILTER

Lauren A. Christopher, Weedsport, N.Y., and David L. Sprague, Roosevelt, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 1, 1982, Ser. No. 394,320

Int. Cl.³ G06F *7/50*

U.S. Cl. 364—770 **8 Claims**

1. Incrementing/decrementing circuitry for receiving a binary number and selectively incrementing or decrementing said number comprising:

M input terminals for applying respective bits of said binary number where M is an integer;

M output terminals, one each of which is associated with respective ones of said M input terminals;

first and second control terminals for applying first and second logic control signals, said first control signal conditioning said circuitry to perform an increment/decrement operation and said second control signal determining if the operation will be an increment or a decrement;

M LOGIC UNITS each having respective carry in terminals and respective carry out terminals;

means connecting the first control terminal to the carry in terminal of a first of said M LOGIC UNITS;

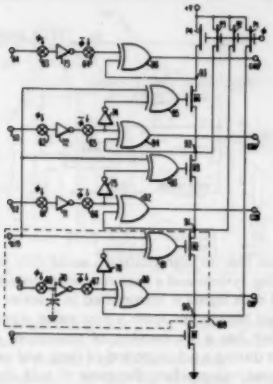
respective means serially connecting the carry out terminals

of the first to (M-1)th LOGIC UNITS to the respective carry in terminals of the second to the Mth LOGIC UNITS respectively;

respective means for selectively precharging the carry in terminals of the M LOGIC UNITS;

and wherein each LOGIC UNIT further includes;

a. a first combinatorial logic circuit having a first input terminal connected to the carry in terminal, a second input terminal connected to one of said M input terminals and an output terminal connected to one of said M output terminals, the output function of which is characterized by the exclusive NOR operation on input



signals at the carry in terminal and at said one of said M input terminals;

b. a transistor having a principal conduction path connected between the carry in and carry out terminals and having a control electrode; and

c. a second combinatorial logic circuit having a first input terminal connected to said second control terminal, a second input terminal connected to said one of said M input terminals, and an output terminal connected to the control electrode of said transistor, the output function of said second logic circuit being characterized by the exclusive OR operation on input signals at the second control terminal and said one of said M input terminals.

4,486,852

SYNCHRONOUS TIME-SHARED DATA BUS SYSTEM

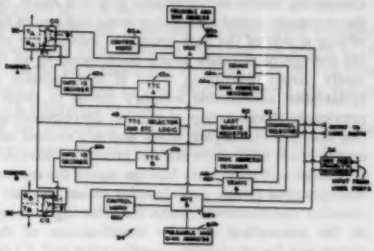
Keith S. Champlin, Minneapolis; Ernest C. Preimesberger, Coon Rapids; Larry A. Meyer, Spring Lake, and George W. Miller, Anoka, all of Minn., assignors to FMC Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 912,780, Jun. 5, 1978, abandoned. This application Jun. 5, 1979, Ser. No. 45,799

Int. Cl.³ H04J *3/00, 3/08*

U.S. Cl. 364—900 **16 Claims**

1. A data bus system comprising a plurality of terminals interconnected in a continuous chain for distributing serial digital data in a format which includes a continuous series of time frames of a predetermined length sufficient to include time for the initiation of data by one or more of said terminals, each time frame being preceded by a control word which is produced by a system controller terminal which defines the start of the time frame and identifies the terminal producing said control word, each terminal including means for receiving said data and control work from one terminal and retransmitting them to another terminal in the chain, a plurality of said terminals comprising broadcast terminals capable of intitiating said data within any of said time frames, means for permitting each broadcast terminal to determine according to predetermined time measured from reception of a control work when it may initiate data within any given time frame without interfering with data initiated by others of said broadcast terminals within said time frame, said terminals including a plurality of controller terminals each of which is selectively capable of supplying said control words, and logic means at each of said



controller terminals for detecting the absence of received control words and for deciding according to predetermined criteria whether or not the controller terminal shall thereupon itself produce control words for defining the start of said time frames.

4,486,853

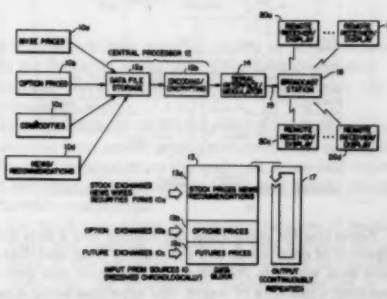
APPARATUS FOR RECEIVING AND DISPLAYING CONTINUOUSLY UPDATED DATA

Frederick G. Parsons, Arlington, Va., assignor to Telemet American, Inc., Alexandria, Va.

Filed Apr. 1, 1981, Ser. No. 249,830

Int. Cl.³ G06F *7/00*

U.S. Cl. 364—900 **39 Claims**



1. Apparatus for receiving an encoded data stream comprising a plurality of data groups as transmitted from a remote location and for selectively accessing the received data stream to sort out and store only those data groups of interest, each data group of the encoded data stream includes its unique identifying word, the encoded data stream includes a classifier manifestation indicative of a protected data group, said apparatus comprising:

(a) decoder means for receiving and decoding the transmitted, encoded data stream;

(b) temporary storage means coupled to said decoder means for sequentially receiving and temporarily storing, one at a time, at least said identifying word of each received and decoded data group of the data stream;

(c) updateable, addressable memory means for storing a plurality of those data groups of interest and their identifying words at corresponding, addressable locations therein; and

(d) control means comprising comparing means coupled to said temporary storage means and said updateable, ad-

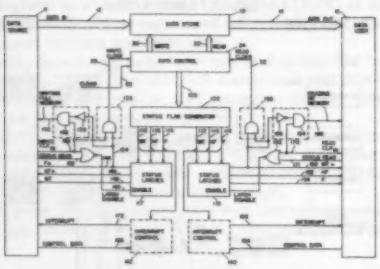
dressable memory means for accessing the identifying word currently stored in said temporary storage means and each of said identifying words of the data groups of interest and for comparing the temporarily stored, current identifying word with each of the identifying words of the data groups of interest, updating means responsive to said comparing means and operative in a first mode, between the currently stored identifying word and one of the identifying words of the data groups of interest for effecting the storage of the data group corresponding to the currently stored identifying word in that location of said updateable, addressable memory means in place of the previously stored group of interest corresponding to the one matched identifying word, and in a second mode if a match is not made between the groups of interest to discard from said temporary storage means the received and decoded data group, and classifier means settable with a classifier manifestation means for effecting a comparison of the transmitted classifier manifestation of the data stream and the set classifier manifestation and, if a comparison is made therebetween, for accessing and transfering the protected data group to said temporary storage means and, if a comparison is not made therebetween, for discarding the protected data group.

4,486,854

FIRST-IN, FIRST-OUT MEMORY SYSTEM

William Yuni, Randolph, Mass., assignor to Codex Corporation, Mansfield, Mass.

Filed Oct. 15, 1981, Ser. No. 311,742
Int. Cl.³ G06F *13/00*; G11C *14/00*
U.S. Cl. 364—900 **17 Claims**



1. Apparatus for controlling the loading into a data store of a sequence of data words and the reading from said data store of said data words in the same said sequence, said data store comprising a plurality of stages, said apparatus being arranged for determining the next-to-be-read and next-to-be-loaded stages of said data store comprising:

pointer circuitry connected to specify the next-to-be-loaded one of said stages and to specify independently the next-to-be-read one of said stages,

a loader responsive to said pointer circuitry and connected to enable loading said next data word in said sequence to be loaded,

a reader responsive to said pointer circuitry and connected to enable reading, independently of said loader, said next data word in said sequence to be read, and

pointer update circuitry for updating the status of said pointer circuitry after each said loading and after each said reading,

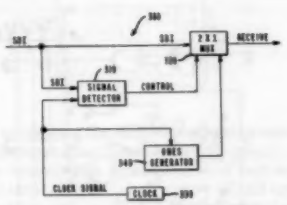
said pointer circuitry comprising a register of elements each element occupying one of two possible states and each element associated with one of said stages, said elements residing in states which depend on which of said stages contain data words, said states being indicative of which stages are the next-to-be-loaded and the next-to-be-said next to be read and next to be loaded stages being specified by particular ones of said elements based on the states occupied by at least some of said elements.

4,486,855

ACTIVITY DETECTOR USABLE WITH A SERIAL DATA LINK

Jack R. Duke, San Marcos, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 28, 1982, Ser. No. 343,140
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—900 **8 Claims**



1. In a data link for transmitting a serial data signal between a data sending system and a data receiving system wherein the data of said data signal is transmitted in a series of binary bits in which said binary bits have a first value when the state of said data link has a set number of transitions between two signal levels during a select period of time, and said binary bits have a second value when the state of said data link has a second lesser number of such transitions during said select period of time, an activity detector comprising:

clock signal generating means for generating a clock signal having a select number of transitions during said select period of time;

a bit signal generating means connected to said clock signal generating means for generating responsive to said clock signal, a bit signal having a series of bits of a single value during said select time period;

signal detector means having a first input for receiving said data signal, a second input connected to said clock signal generating means for receiving said clock signal, and a control signal output for outputting a control signal responsive to said data signal and said clock signal at said first and second inputs respectively, said control signal having a first voltage level continuously responsive to data signal transitions of a desired polarity, and a second voltage level continuously responsive to the absence of data signal transitions during said select number of clock signal transitions; and

multiplexer means having a first input for receiving said data signal, a second input connected to said bit signal generating means, a control terminal connected to the control signal output of said signal detector means and an output; said multiplexer means being operable for passing only said data signal when said control signal has its first voltage level, and for passing only said bit signal when said control signal has its second voltage level such that said data signal is blocked and said bit signal is output from said multiplexer means when there is no activity on said data link for a set number of clock signal transitions.

4,486,856

CACHE MEMORY AND CONTROL CIRCUIT

George Heckel, and Gary B. Ollendick, both of Mundelein, Ill., assignors to Teletype Corporation, Skokie, Ill.

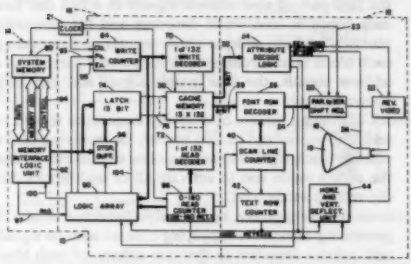
Filed May 10, 1982, Ser. No. 376,453
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—900 **11 Claims**

1. A cache memory and control circuit **(16)** for coupling a

system memory (80) for storing a plurality of memory data words with a video display circuit (12) for displaying visual representations of selected memory data words comprising:

a cache memory (30) for storing a plurality of cache data words of sufficient number for one text row of the visual representations; said cache memory (30) comprising independent means (72, 86, 90) for reading and means (70, 84, 90) for writing for concurrently, selectively accessing different portions of said cache memory (30);

said reading means (72, 86, 90) arranged to sequentially read from said cache memory (30) the cache data words of a first text row, starting with the first cache word, and to transfer said cache data words to said video display circuit



(12) once for each scan line of the video representation of said first text row, each video representation of a text row comprising a plurality of said scan lines;

said writing means (70, 84, 90) arranged to sequentially obtain from said system memory (80) and to write into said cache memory (30) the cache data words of the next subsequent second text row, starting with the first cache data word of said second text row and ending with the last cache data word of said second text row;

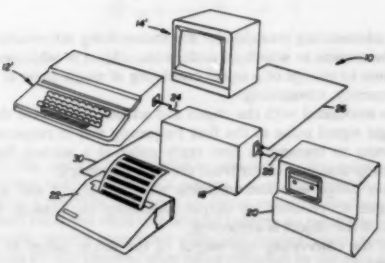
means (90, 95) for enabling said writing means (70, 84, 90) immediately after said reading means (72, 86, 90) has read the first cache data word of said first text row in the implementation of the display of the last scan line of said first text row.

4,486,857

DISPLAY SYSTEM FOR THE SUPPRESSION AND REGENERATION OF CHARACTERS IN A SERIES OF FIELDS IN A STORED RECORD

Paul C. Heckel, Los Altos, Calif., assignor to Quickview Partners, Los Altos, Calif.

Filed Oct. 6, 1982, Ser. No. 433,141
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—900 **21 Claims**
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 18 Pages)



1. In a microprocessor system having an input subsystem, an output subsystem capable of displaying a string of alphanumeric characters of length S, and a storage subsystem capable of storing strings of alphanumeric characters, each made up of no more than n substrings F_i of alphanumeric characters each of length L_i, and a processor subsystem, an improved data display system comprising:

means for recognizing certain preselected alphanumeric characters in each substring F_i;

means for selectively removing the recognized preselected characters in each substring F_i so that the length L_i of F_i is reduced to a shortened substring f_i of predetermined length l_i less than L_i and then displaying the reduced-length substrings f_i; and

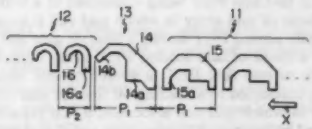
means for displaying a full-length substring F_i selectively chosen from one of the displayed reduced fields f_i.

4,486,858

MAGNETIC-BUBBLE MEMORY DEVICE

Takeyasu Yanase, Yokohama, and Masashi Amatsu, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 14, 1983, Ser. No. 513,610
Claims priority, application Japan, Jul. 19, 1982, 57-125531
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—39 **12 Claims**



1. A magnetic-bubble memory device in which magnetic bubbles are driven by a magnetic drive field, comprising:

a magnetic layer in which the magnetic bubbles can be propagated; and

a bubble propagation path along which the bubbles in said magnetic layer can be propagated in a bubble propagation direction in response to the magnetic drive field rotating in the plane of said magnetic layer, said bubble propagation path comprising:

a first track comprising propagation patterns of magnetically soft material, including a first terminal pattern, each of the propagation patterns having end portions with tips, the propagation patterns arranged in the bubble propagation direction with the end portions of successive propagation patterns parallel to each other with a gap therebetween;

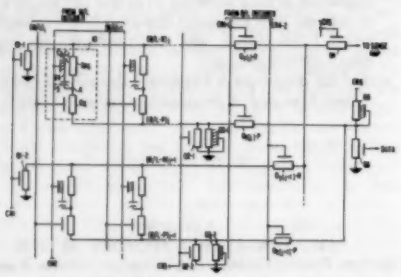
a second track comprising hook-shaped propagation patterns of magnetically soft material, including a second terminal pattern, each of the hook-shaped propagation patterns having a first end portion and a second end portion, the hook-shaped propagation patterns arranged in the bubble propagation direction with the second end portion of a preceding pattern not parallel to and separated from the first end portion of the succeeding pattern; and

a connection pattern of magnetically soft material, having a first end portion parallel to an adjacent end portion of the first terminal pattern, a first end portion tip aligned with the tip of the adjacent end portion of the first terminal pattern and with the bubble propagation direction, and a second end portion arranged with respect to the second terminal pattern in the same constructional relationship as the hook-shaped propagation patterns of said second track.

4,486,859
ELECTRICALLY ALTERABLE READ-ONLY STORAGE CELL AND METHOD OF OPERATING SAME

Charles R. Hoffman, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 19, 1982, Ser. No. 350,530
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—185 9 Claims



1. A memory array composed of a plurality of memory cells arranged in rows and columns, each of said memory cells comprising:

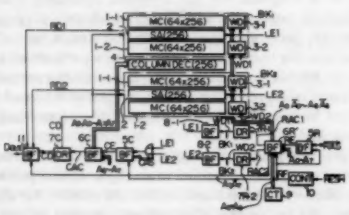
a first FET having a drain connected to a programming bit line of a row of said array in which said cell is located, a gate of said first FET being connected to a word line for a column of said array in which said cell is located;

a dual gate second FET having a floating gate and a control gate, a drain of said second FET being connected to a source of said first FET, a source of said second FET being connected to a reading bit line for said row of said array in which said cell is located, a first capacitor being formed between said floating gate and the channel of said second FET, a second capacitor being formed between said floating gate and an upper electrode, said upper electrode being coupled to a first control line which is connected in common with upper electrodes of other cells in said array, and a third capacitor being coupled between said floating gate and the interconnected source of said first FET and drain of said second FET.

4,486,860
SYSTEM FOR DRIVING A DYNAMIC RANDOM ACCESS MEMORY DEVICE

Yoshihiro Takemae, Tokyo, and Tomio Nakano, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 28, 1982, Ser. No. 392,518
Claims priority, application Japan, Jun. 29, 1981, 56/99754
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—222 4 Claims



1. A system for driving a dynamic random access memory device having a plurality of blocks, each of said plurality of blocks including memory cells arranged in rows and columns, with word decoders connected to said rows and sense amplifiers and column decoders connected to said columns, and receiving row address signals having a first and second part, comprising:

first generating means for generating a row enable signal during an access mode in which one of said memory cells is accessed;

second generating means for generating a column enable signal during the access mode;

third generating means for generating a refresh control signal during a refresh mode in which said memory cells are refreshed;

row selecting means, operatively connected to said first and third generating means and to receive the row address signals, for receiving said row enable signal, for supplying the first part of row address signals to select one row of each block to said word decoders and for generating a plurality of row address clock signals corresponding to each block in accordance with the second part of the row address signals, the row enable signal and said refresh control signal;

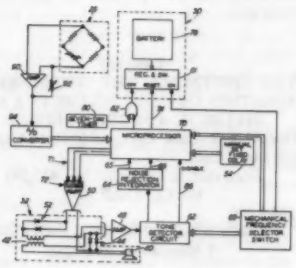
block-activating means, operatively connected to said row-selecting means and to said blocks, for receiving said row address clock signals to activate one of said blocks during the access mode and to activate all of said blocks during the refresh mode; and

column-selecting means, operatively connected to said third generating means, for supplying column address signals to said column decoders so that one column of each block is selected during the access mode, said column-selecting means being disabled by said refresh control signal during the refresh mode.

4,486,861
TRANSPONDER TELEMETRY

Norman A. Harmel, Greensboro, N.C., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,290
Int. Cl.³ H04B *11/00*
U.S. Cl. 367—2 1 Claim



1. A telemetering transponder for transmitting information about the tension to which an underwater object is subjected, in response to receipt of a signal consisting of single pulse at a first frequency, comprising:

means associated with the object and adapted to receive the single signal pulse at the first frequency and in response thereto to transmit a first reply pulse at a second frequency that may differ from the first frequency;

a strain gauge in communication with the object and arranged to produce an output indicating the tension to which the object is subjected;

means for converting the output of the strain gauge to a count;

means for reducing the count to zero at a fixed counting speed; and

means for transmitting a second reply pulse at a third fre-

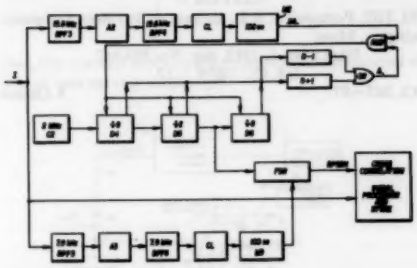
quency that may differ from the second frequency, upon the count reaching zero.

4,486,862

DETERMINATION OF SYSTEM RESPONSE

Ronald J. Wyber, Sydney, Australia, assignor to Commonwealth of Australia, Canberra, Australia

Filed Aug. 19, 1982, Ser. No. 409,670
Claims priority, application Australia, Aug. 24, 1981, PF0404
Int. Cl.³ G01C 17/38
U.S. Cl. 367—13 23 Claims



1. A method of determining the system response for a system where there is noise present and the propagation time of a signal used to test the system response is subject to variation, the method comprising the steps of:

(a) generating a broad band reproducible test signal and applying it to the system for propagation therethrough;

(b) detecting the signal after it has been passed by the system;

(c) producing a replica of the test signal;

(d) applying compensation to either the detected signal or the replica signal to compensate for fluctuations in propagation time of the test signal through the system, and

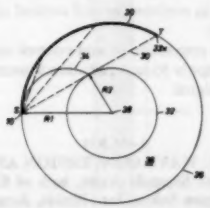
(e) cross correlating the compensated signal with the non-compensated one of the detected and replica signals in order to derive the system response.

4,486,863

CIRCULAR SEISMIC ACQUISITION SYSTEM

William S. French, Covington, La., assignor to Tensor Geophysical Service Corporation, Metairie, La.

Filed Aug. 11, 1983, Ser. No. 522,329
Int. Cl.³ G01V 1/38
U.S. Cl. 367—15 6 Claims



1. The method of gathering marine seismic data employing a streamer cable towed by a marine vessel, said streamer cable having a plurality of seismic receivers spaced therealong, each of said receivers receiving seismic reflections resulting from an acoustic source associated with said marine vessel being received by said receiver after being reflected by the geophysical terrain located between said source and said receiver, which comprises

traversing as closely as navigational techniques, wind and current conditions permit at least a partial circle with said marine vessel about a steerage center,

creating acoustic source signals from said source, and

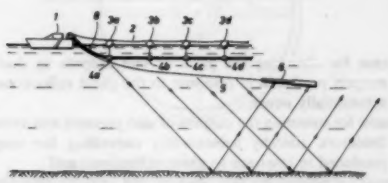
receiving reflected signals from said source at at least one of said receivers, said receiver tracking a feathered course about said steerage center, the data gathered therefrom being that which is associated with the midpoint of a subtending moving chord defined by said source and said receiver.

4,486,864

METHOD FOR MARINE SEISMIC EXPLORATION

Leo Ongkiehong, and Willem Huizer, both of Rijswijk, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 20, 1981, Ser. No. 284,854
Claims priority, application United Kingdom, Sep. 8, 1980, 8028953
Int. Cl.³ G01V 1/38
U.S. Cl. 367—23 10 Claims



1. A method for marine seismic exploration in which a seismic source array comprising a plurality of seismic sources is used, said method comprising:

discharging simultaneously a preset number of seismic sources, each having a known volume V_1, said sources producing seismic waves having substantially identical form and a frequency range f_1;

detecting said seismic waves after they have been reflected by a series of reflection points and providing a sum signal;

filtering said sum signal using a filter having a frequency range f_1 to provide a signal having substantially equal phase of the individual components in the frequency range f_1;

repeating the above steps using a preset number of seismic sources, each having a known volume V_2 different than V_1 to produce seismic waves substantially identical form and a frequency range f_2;

repeating the above steps using seismic sources having volumes V_3, V_4–V_n and frequency ranges f_3, f_4–f_n; and,

stacking the filtered sum signals to produce a final sum signal having a frequency range f_1–f_n.

4,486,865

PRESSURE AND VELOCITY DETECTORS FOR SEISMIC EXPLORATION

William H. Ruehle, Westport, Conn., assignor to Mobil Oil Corporation, New York, N.Y.

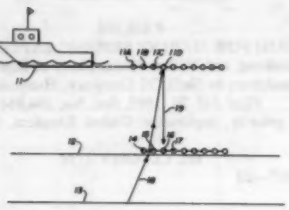
Continuation-in-part of Ser. No. 182,916, Sep. 2, 1980, abandoned. This application Aug. 25, 1981, Ser. No. 295,966
Int. Cl.³ G01V 1/36
U.S. Cl. 367—24 2 Claims

1. A seismic detection system for suppressing ghost reflections relative to primary reflections in seismic exploration wherein a primary reflection is caused by an upwardly travelling compressional wave and a ghost reflection is caused by a rarefaction wave travelling downwardly from the surface comprising:

a pressure detector producing a positive output in response to upwardly travelling compressional waves and a negative output in response to downwardly travelling rarefaction waves;

a velocity detector producing a positive output in response to upwardly traveling compressional waves and a positive output in response to downwardly travelling rarefaction waves;

filter means for changing the frequency content of at least one of said outputs including a minimum phase deconvolution operator having a predetermined amount of white noise added to the zero lag of the auto correlation function;



means for changing the gains of said outputs so that the outputs produced in response to the ghost reflections are substantially equal;

means for summing the outputs of said pressure and velocity detectors, thereby substantially cancelling the outputs produced in response to ghost reflections; and

means for positioning said pressure and velocity detectors in close proximity along a line of seismic exploration.

4,486,866

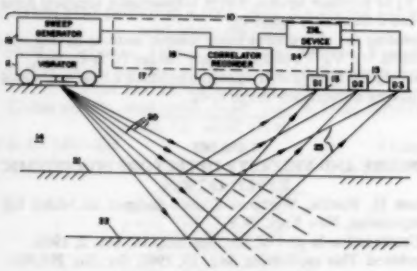
SEISMIC EXPLORATION USING NON-IMPULSIVE VIBRATORY SOURCES ACTIVATED BY STATIONARY, GAUSSIAN CODES, AND PROCESSING THAT RESULTS IN DISTORTION-FREE FINAL RECORDS PARTICULARLY USEFUL IN STRATIGRAPHIC TRAP DETERMINATION

Francis Muir, Laguna Niguel, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 117,689, Feb. 1, 1980, Pat. No. 4,346,461. This application Oct. 28, 1981, Ser. No. 316,006

Int. Cl.³ G01V *1/20, 1/36*

U.S. Cl. 367—39 **13 Claims**



1. A method of seismic surveying using non-impulsive vibratory sources that recovers all the essential information of full waveform recording in a distortion-free manner which comprises:

A. injecting non-impulsive, Gaussian, zero mean, stationary seismic vibrations into the earth by activating at least one vibratory source with a driving code of preselected characteristics;

B. recording a zero-memory, non-linear representation of the seismic vibrations that have propagated through the earth from said at least one vibratory source to at least one receiver; and

C. cross-correlating a waveform preserved representation of said injected Gaussian, zero mean, stationary vibrations with said zero-memory, non-linear representation of the received seismic vibrations; the result of said cross-correlation being a seismic survey record that is essentially distortion-free.

4,486,867

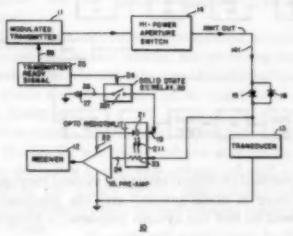
TRANSMIT/RECEIVE SOLID STATE SWITCHING SYSTEM

Lyle M. Hill, Portsmouth, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 1, 1982, Ser. No. 353,447

Int. Cl.³ G01S *7/52*

U.S. Cl. 367—87 **6 Claims**



1. A transmit/receive system for a sonar system comprising:

a transmitter of electrical energy;

a transducer connected to said transmitter;

a receiver;

means connecting said receiver to said transducer;

means for providing a control signal;

said connecting means having a high resistance state and a low resistance state in response to said control signal;

means for providing electrical energy to said transducer for a time from said transmitter;

means for providing said control signal to said connecting means to provide a high resistance state in said connecting means during the time said transducer is being energized;

said connecting means comprising:

a radiation sensitive impedance means connected between said transducer and said receiver;

a radiation source for providing radiation upon said impedance means in response to said control signal;

a power supply;

a switch means responsive to said control signal to connect said power supply to said radiation source in response to said control signal.

4,486,868

ULTRASONIC WAVE CONVERSION APPARATUS

Masao Kodera, and Sigeyuki Akita, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 24, 1981, Ser. No. 305,358

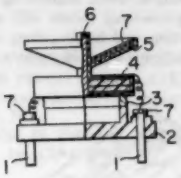
Claims priority, application Japan, Oct. 6, 1980, 55-141577

Int. Cl.³ G01V *1/18;* **H04R** *1/16*

U.S. Cl. 367—140 **4 Claims**

1. An ultrasonic wave conversion apparatus including electrodes, a support member for supporting said electrodes, a vibrator, a securing member for securing said vibrator to said support member, a moving diaphragm, a fixing member for fixing said moving diaphragm to said vibrator, and an insulating film of a predetermined thickness coating whole surfaces of said electrodes, said vibrator, said moving diaphragm and said

fixing member which are exposed to external atmosphere, said insulating film coating said moving diaphragm functioning as a



damping member to shorten the duration of the damped vibration of said moving diaphragm.

4,486,869

UNDERWATER ACOUSTIC DEVICES

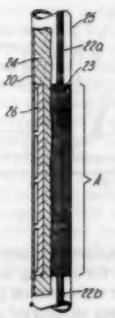
Cecil G. Carter, Farnham, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Feb. 11, 1982, Ser. No. 347,767

Claims priority, application United Kingdom, Feb. 25, 1981, 8105960

Int. Cl.³ H04R *17/00*

U.S. Cl. 367—154 **4 Claims**



1. An underwater acoustic device including a tube composed of polymeric piezoelectric material having a high piezoelectric stress constant and low Young's modulus, rigid means having cylindrical outer walls abutting the inner wall of said tube at intervals therealong for dividing said tube into a plurality of chambers, and sets of electrical terminal means contacting inner and outer curved surfaces of said tube at each chamber wherein each of said sets of electrical terminal means is associated with one of said chambers to define a plurality of tubular transducer elements.

4,486,870

OPTICAL DATA STORAGE

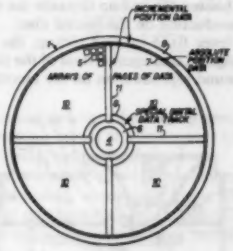
Robert M. Pettigrew, Pound Cottage, High St., Foxton, Cambridgeshire; John D. Bradbrook, 56, Downlands, Royston, Hertfordshire, and Ronald C. Wainwright, Chauffeurs Cottage, Aston La., Bragbury End, Stevenage, Hertfordshire, all of England

Continuation-in-part of Ser. No. 227,274, Jan. 22, 1981,. This application Jul. 19, 1982, Ser. No. 399,862

Claims priority, application United Kingdom, Jul. 23, 1981, 8122737

Int. Cl.³ G11B *7/00*; G03B *23/00*

U.S. Cl. 369—32 **52 Claims**



1. An optical data storage apparatus comprising:

a planar data storage member having at least one first zone including means for storing pages of alphanumeric or graphical optically readable data, at least one second zone including means spaced from the bulk of the pages included in said first zone for defining absolute positional data in at least one coordinate direction on said storage member, and means on said storage member spaced from the bulk of said pages included in said first zone for providing positional data in the other coordinate direction relative to said pages of information, at least one additional zone on said data storage member including means for storing binary digital information of a significantly different type than the other information stored on said member and including indexing information indicating the location of particular pages of optically readable data;

means for directing non-coherent light at a specific selected page of said stored information on said storage member;

drive means for producing relative motion between the light directing means and the storage member;

input means for selecting information desired by an operator to be displayed;

reading means for reading said indexing information and said positional data;

means for controlling the drive means in dependence upon the data read by the reading means and the signals supplied by said input means to cause the light-directing means and storage member to be positioned relatively to one another to cause light to be directed onto the selected page; and

means for displaying the alphanumeric or graphical data on the selected page.

4,486,871

CONTINUOUS REPEATING TYPE SIMPLIFIED SOUND REPRODUCING DEVICE

Eishi Koike, Sagamihara, Japan, assignor to Ozen Corporation, Tokyo, Japan

Filed Jan. 6, 1984, Ser. No. 568,655

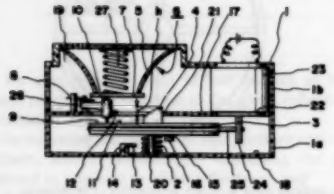
Claims priority, application Japan, Aug. 26, 1983, 58-155820

Int. Cl.³ G11B *17/00*; A63H *3/33*

U.S. Cl. 369—67 **5 Claims**

1. A continuous repeating type simplified sound reproducing device comprising:

a casing;
a stylus pressure spring disposed within the casing;
a record disc having a recorded groove with starting and end points of sound reproduction resiliently supported in the casing by the stylus pressure spring;
an upwardly facing cam disposed at a central part of the record disc;
a speaker cone fixedly mounted in the casing;
a sound transmitting member disposed within the casing and forming a speaker unit with the speaker cone;
a pickup interposed between the record disc and the sound transmitting member, the stylus pressure spring imparting a stylus pressure on the pickup;
a return spring disposed within the casing, the return spring normally biasing the pickup towards the starting point of sound reproduction on the record disc;
a scooping lever fixed on said pickup, the scooping lever riding along the cam upon arrival of the pickup at the end point of sound reproduction on the record disc such that



the scooping lever urges the record disc to retract against the force of the stylus pressure spring by the height of the cam so as to release stylus pressure on the pickup and permit returning of the pickup to the starting point of sound reproduction on the record disc;
a fixed locking lever disposed in the casing and having a locking face disposed parallel to the plane of rotation of the record disc;
a rotating locking lever disposed on the record disc and having a locking face parallel to the plane of rotation of the record disc and rotatable together with the record disc, the rotating locking lever entering below the locking face of the fixed locking lever only when the record disc is in a retracted position; and
at least one of the locking faces of the fixed and rotating locking levers having a locking face length corresponding to the angle of rotation sufficient to maintain the record disc at its retracted position at least until the pickup has returned to the starting point of sound reproduction on the record disc.

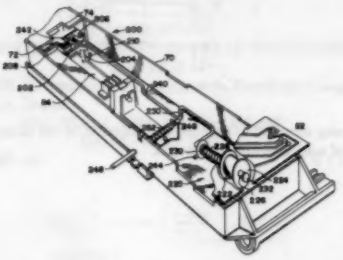
4,486,872

IN-ARM STYLUS CLEANER FOR DISC RECORD PLAYER

Charles F. Hackett, Indianapolis; Eric A. Brauer, Danville; Kevin C. Kelleher, Plainfield, and Richard R. Wright, Indianapolis, all of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 28, 1982, Ser. No. 426,009
Int. Cl.³ G11B *3/58*
U.S. Cl. 369—71 **6 Claims**

1. In a record player including a pickup stylus subject to engagement with a turntable-supported record for recovering prerecorded information disposed thereon during playback; said stylus being mounted at one end of a stylus arm having the other end yieldably supported in a translatable carriage; said player further having means mounted in said carriage for lifting and lowering said stylus in a manner causing said stylus to protrude from said carriage to effect engagement and disengagement of said stylus with a record mounted on said turntable; said player further including a stylus cleaning means mounted in said carriage and comprising a holder carrying a stylus wiping element, and means for causing motion of said holder between a retracted position and an advanced position defining a path traversing said stylus; said player further including a selectively-actuated sequencing means, coupled to said stylus lifting/lowering means and said stylus cleaning means, for retracting said holder along said path in a first non-engaging direction while said stylus is in engagement with



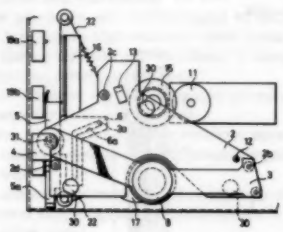
a turntable-mounted record to allow said wiping element to pass said stylus without any contact therewith for disengaging said stylus from said turntable-mounted record, and causing said holder to return to said advanced position along said path in a second engaging direction opposite to said first non-engaging direction while said stylus is disengaged from said turntable-mounted record to allow said wiping element to clean said stylus in said second engaging direction.

4,486,873

DISC LOADING MECHANISM

Hideyuki Takahashi; Isami Kenmotsu; Takahiro Okajima, and Yoshio Takahashi, all of Saitama, Japan, assignors to Pioneer Electric Corporation, Tokyo, Japan

Filed Jun. 17, 1982, Ser. No. 389,355
Claims priority, application Japan, Jun. 20, 1981, 56/94572
Int. Cl.³ G11B *25/04, 17/04*
U.S. Cl. 369—77.1 **9 Claims**



1. A disc loading mechanism, comprising:
disc rotating means for rotating said disc when engaged therewith at a disc reproduction position;
a flat tray for receiving an inserted disc thereupon at a disc insertion position and for transporting said disc horizontally to a disc reproduction position whereat said tray separates vertically from said disc, said tray including guide means on the outer periphery of the flat area of said tray for engaging and centering said disc on said flat area, said tray being supported to be movable between said disc insertion position and said disc reproduction position;
a driving cam having a varying vertical thickness;
cam contacting means for supporting the tray on the upper side of said driving cam said driving cam; and
driving means for moving horizontally said driving cam

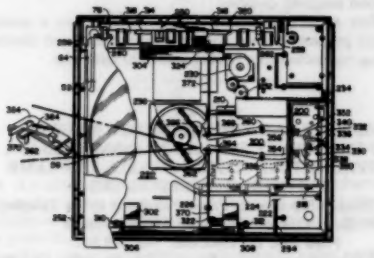
thereby moving said tray as said contacting means follows the vertical thickness of said cam, said disc inserted onto said tray being vertically engaged with said disc rotator means by moving said driving cam.

4,486,874

CARRIAGE-ACTUATED DISC HANDLING APPARATUS FOR VIDEO DISC PLAYER

Clyde F. Coleman, Crawfordsville, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 28, 1984, Ser. No. 594,068
Int. Cl.³ G11B *17/04*
U.S. Cl. 369—77.2 **12 Claims**



1. In a player for recovering prerecorded information from a turntable-mounted disc record by means of a signal pickup when record/pickup relative velocity is established; said signal pickup being housed in a carriage which is translatably mounted in said player for motion along a path between a standby position out of registry with, and an end-of-play position in registry with said turntable-mounted record; means for selectively driving said carriage; said player having a record receiving means subject to disposition in a raised position and a lowered position relative to said turntable; said record receiving means supporting said record when occupying said raised position thereof; said record receiving means depositing said record on said turntable for rotation therewith free from any hindrance by said record receiving means when disposed at its lowered position; record handling apparatus comprising:

(A) a movably-mounted actuated member for establishing relative motion between said record receiving means and said turntable for transferring a record from said record receiving means to said turntable and vice versa; and

(B) an angular actuating member disposed on said carriage at a non-perpendicular angle to said carriage path; said angular actuating member engaging one end of said actuated member as said carriage arrives at an intermediate position thereof along said carriage path during the translation of said carriage toward said standby position; further motion of said carriage toward said standby position displacing said one end of said actuated member in a direction substantially at right angles to said carriage path and in a manner disposing said record receiving means at said raised position, whereby a turntable-supported record is transferred to said record receiving means.

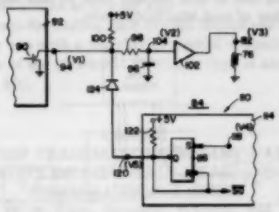
4,486,875

VIDEO DISC PLAYER HAVING LIFTER DRIVING CIRCUIT

Kevin C. Kelleher, Plainfield, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 25, 1983, Ser. No. 478,935
Int. Cl.³ G11B *3/10*
U.S. Cl. 369—170 **17 Claims**

1. In a disc player for recovering prerecorded signals from a disc record by means of pickup stylus; said stylus being disposed at one end of a stylus arm having its other end supported in a carriage; said player having a stylus arm lifting/lowering mechanism comprising a movable stylus arm support member and a selectivelyactivated, support member actuating means; said actuating means, when energized, causing said stylus arm support bracket to move toward said record to establish stylus/record engagement; lifter driving means comprising:



(A) first means coupled to said actuating means for energizing said actuating means at a lower rate to gently move said stylus toward said record; and

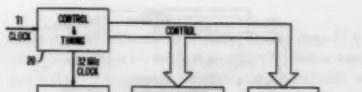
(B) second means coupled to said actuating means for energizing said actuating means at a higher rate when said stylus/record engagement is detected to cause said stylus arm support bracket to rapidly clear said stylus arm.

4,486,876

BROADBAND TRANSMISSION ON LIMITED BANDWIDTH DIGITAL LINE

Wilmer B. Gaunt, Jr., Boxford, and Michael R. Glammusso, Andover, both of Mass., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 31, 1982, Ser. No. 413,469
Int. Cl.³ H04J *3/02*; H04B *1/64*
U.S. Cl. 370—7 **9 Claims**



1. An arrangement for providing timing recovery information in a PCM transmission system comprising:

means for converting an input signal into compressed PCM words according to a compression characteristic having linear chords; each chord represented by a combination of chord bits comprising at least one "1", and

means for centrally locating said chord bits within said PCM words.

4,486,877

PACKET SWITCHING LOOP-AROUND NETWORK AND FACILITIES TESTING

Jonathan S. Turner, Evanston, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 25, 1982, Ser. No. 392,381
Int. Cl.³ H04J *3/14*
U.S. Cl. 370—15 **50 Claims**

1. A loop-around testing arrangement for a packet communication system comprising

a plurality of interface means,

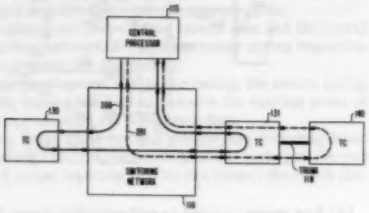
network means responsive to a receipt of information packets for establishing communication paths for said interface means,

processor means for controlling the processing of said packets through said interface means,

each one of said packets having an error field comprising error information signals, and

each of said interface means comprising:

means controllable by a first one of said packets for looping said first one of said packets back to said network means and other of said interface means,



means responsive to a receipt of said first one of said packets for checking said error information signals to identify an error condition and

means responsive to said checking for aborting said looping back of said first one of said packets upon occurrence of said error condition.

4,486,878

DIGITAL TELEPHONE EXCHANGE WITH MEANS FOR PROCESSING PACKET-SWITCHED DATA

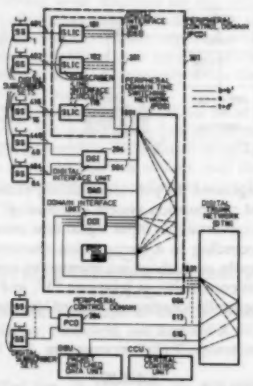
Gerardus M. J. Havermans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 16, 1982, Ser. No. 408,339

Claims priority, application Netherlands, Sep. 23, 1981, 8104368

Int. Cl.³ H04J 3/02

U.S. Cl. 370—60 **4 Claims**



1. A digital telephone exchange for connecting a plurality of digital subscriber sets to a time division multiplex transmission line, said subscriber sets and time division multiplex transmission line transmitting and receiving circuit switched data signals, and packet switched data signals which include signalling information, telemetry data and slow data, comprising:

a plurality subscriber line interface circuit for connecting each of said plurality of digital subscriber sets to said time division multiplexed transmission line comprising:

means for identifying the packet switched data signals from said subscriber sets;

a packet processing unit connected to receive said identified packet switched data, said unit including means for dividing the packet into signalling information, and into telemetry data and slow data;

means for combining for each subscriber set the signalling information, telemetry data and slow data received from said time division multiplex transmission line to form one packet switched data signal; and

means for transmitting telemetry data and slow data to said means for combining from a second assigned channel of said time multiplexed transmission line, and from said processing unit to said second assigned channel of said multiplexed transmission line, and for transmitting said signalling information to said means for combining from a first assigned channel of said time multiplexed transmission line, and from said packet processing unit to said second assigned channel;

said first assigned channel being connected to a central signal processing unit, and said second assigned channel being connected to a packet switched data unit.

4,486,879

METHOD AND APPARATUS FOR MIXING LOW-FREQUENCY SIGNALS TRANSMITTED VIA DIFFERENT TIME SLOTS TOWARDS THE SAME TELEPHONE RECEIVER SET

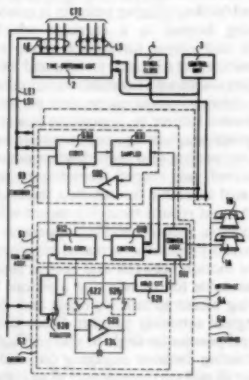
Rainier Baltz, Lingolsheim, France, assignor to La Telephonie Industrielle et Commerciale Telic Alcatel, France

Filed Jan. 18, 1982, Ser. No. 340,391

Claims priority, application France, Jan. 21, 1981, 81 01033

Int. Cl.³ H04M 3/56

U.S. Cl. 370—62 **4 Claims**



1. A method of mixing a plurality of low-frequency signals which are transmitted in digital sample form over respective different time slots in a single time-divided telephone link for reception by a destination telephone receiver set served by said link, wherein the method includes the following steps:

successively, at a telephone set interface for each said telephone receiver set, decoding the signal samples received for said destination telephone receiver set during each time frame into an many pulses as there are signal samples destined for said telephone receiver set, the values of said pulses being representative of respective ones of the received signal samples and the durations of said pulses being short relative to the duration of a frame for said link;

temporarily storing each of said pulses at said telephone set interface;

summing said stored pulses at said telephone set interface; and

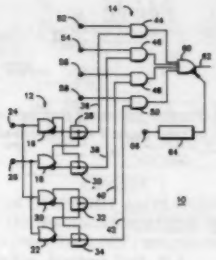
forwarding the resulting pulse sum from said telephone set interface to said destination telephone set before the arrival of a first decoded pulse of a following frame.

4,486,880

OUTPUT MULTIPLEXER HAVING ONE GATE DELAY

Philip A. Jeffery, Mesa; L. J. Reed, Gilbert, and Harold L. Spangler, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 9, 1982, Ser. No. 447,928
Int. Cl.³ H04J 15/00
U.S. Cl. 370—112 5 Claims



1. A multiplexer having a plurality of input conductors each responsive to an input having a first and second state and a plurality of select conductors each responsive to a select signal, for providing an output, comprising:

a select circuit comprising a plurality of gates, each of said input conductors coupled to at least two of said gates, each of said gates having a first gate output having a first and second state and a second gate output having a first and second state, each of said gates comprising differentially coupled transistors, each of said transistors having a collector, each of said collectors providing one of said first and second gate outputs, said collectors dotted with collectors of another one of said transistors so as to provide a plurality of select outputs; and

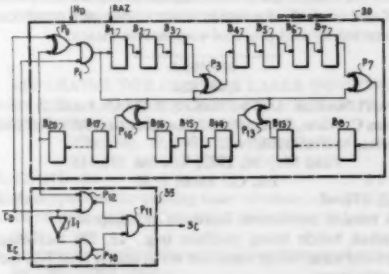
a multiplexer gate coupled to said plurality of input conductors and said select circuit and responsive to said select outputs for determining said output.

4,486,881

DEVICE FOR REAL-TIME CORRECTION OF ERRORS IN DATA RECORDED ON A MAGNETIC MEDIUM

Tristan de Couasnon, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 17, 1981, Ser. No. 274,382
Claims priority, application France, Jun. 19, 1980, 80 13597
Int. Cl.³ G06F 11/10
U.S. Cl. 371—38 7 Claims



1. A device for encoding data to provide redundancy bits and parity bits on data recorded on a multitrack medium comprising:

means for processing data in the form of a sequence of data by dividing said sequence into a plurality of parallel data blocks each to be recorded on a track of said medium and each bit of said blocks having a corresponding parallel bit on the other tracks;

first means for coding on at least one of said tracks a sequence of parity bits in sequential blocks produced by operation on the corresponding parallel bits to be recorded on tracks as blocks; and

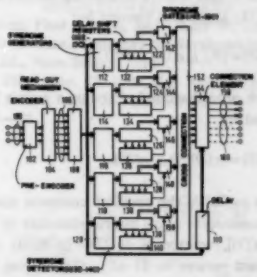
second means for coding each of data blocks and said blocks of parity bits with a plurality of n serial redundancy bits in the form of the shortened Fire code type in each block of N serial bits.

4,486,882

SYSTEM FOR TRANSMITTING BINARY DATA VIA A PLURALITY OF CHANNELS BY MEANS OF A CONVOLUTIONAL CODE

Philippe M. O. A. Piret, Brussels, Belgium, and Thijs Krol, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 27, 1982, Ser. No. 412,066
Claims priority, application Belgium, Sep. 9, 1981, 205909
Int. Cl.³ G06F 11/10
U.S. Cl. 371—45 6 Claims



1. A system for introducing redundant binary data in a plurality of $n \geqq 6$ parallel one bit wide streams (106) into a medium and for extracting those binary data again therefrom while correcting for at most $t \geqq 2$ simultaneously erroneous ones of said serial streams, said system comprising:

a plurality of $k \geqq 2$ data inputs (100) for receiving in parallel successive groups of k input data bits each;

an encoding device (104) comprising first multiplication means for multiplying the k streams of data bits with a generator matrix [G(D)] of n rows by k columns, consisting of a (kxk) identity matrix and an (n−k)xk additional matrix, wherein all elements of [G(D)] are polynomials in D, the delay operator of a length of one bit cell, and are elements of a field F(D) consisting of all Laurent series having coefficients a_i and wherein all elements of the additional matrix are non-zero and at least one thereof is a polynomial with at least two terms; wherein the generator matrix [G(D)] is given by an (nxk) generator matrix of a minimum distance separable symbol correcting code defined in a Galois field $GF(2^m)$ in that the coefficients of the polynomial elements in [G(D)] are the binary elements of the binary representation of the corresponding elements a_i of the Galois field $GP(2^m)$ of the generator matrix of the minimum distance separable code, wherein $2^m \geqq n-1$ and a_i is an element of $GF(2^m)$; said encoding device having n outputs for, in synchronism with the reception of a group of k data bits, outputting a corresponding group having k unmodified data bits together with (n−k) redundant code bits to said medium;

a decoding device for implementing a parity check matrix [H(D)] given by [G(D)]·[H(D)]=0 when all operations

are executed in the field F(D), said decoding device comprising:

a plurality of B decoder modules (112–120) each having respective second multiplication means for receiving said groups of n code bits in parallel for multiplying the received code bit streams by a respective secondary parity check matrix $[H_{1..b..B}(D)]$ of (n−k) rows by n columns, the result of each multiplication consisting in (n−k) parallel streams of syndrome bits, each of said (n−k) streams indicating a preliminary correction bit stream to an associated code bit channel while also corresponding to a respective one of the (n−k) rows, wherein the derivation of $[H_{1..b..B}(D)]$ from [H(D)] is done as follows:

i. a set of B second elements is formed, each second element consisting of 2t channel indices, each combination of t channel indices being contained in at least one of said elements;

ii. for each of said second elements a first intermediate matrix is formed $[R_{1..b..B}(D)]$ consisting of only those columns of [H(D)] that have indices equal to respective indices of code channels contained in said element;

iii. for each of said second elements a second intermediate matrix $[H_{1..b..B}(D)]$ is formed by:

$$[H_{1..b..B}(D)]=[R_{1..b..B}(D)]^{-1}[H(D)]$$

iv. for each of said second elements a matrix $[H_{1..b..B}(D)]$ is formed by:

$$[H_{1..b..B}(D)]=a_L(D)[H_{1..b..B}(D)],$$

wherein $a_L(D)$ is the smallest common multiple of all the denominators of all matrix elements of all matrices $[H_{1..b..B}(D)]$, written as $a_L(D)=D^f\cdot E(D)$ wherein f is the lowest power in D of $a_L(D)$ having a non-zero coefficient;

for each of said B decoder modules, a shift register module (122–130) of (n−k) bits wide for receiving said syndrome bit streams and storing a predetermined sequence length thereof;

for each of said shift register modules, a syndrome detector (132–140) for detecting and enumerating any non-zero syndrome bit sequence in the corresponding shift register and producing a gating signal under control of detection of (o . . . t) non-zero syndrome bit sequences but otherwise a blocking signal;

connected to an output of each of said shift register modules, an (n−k) bit wide syndrome gate (142–150) that is transmitting exclusively under control of the gating signal from the associated syndrome detector, but otherwise blocked;

a cross-connection device (152) for sorting the syndrome bit streams transmitted through said syndrome gates according to the corresponding one of said n code bit channels;

delay means together with third multiplying means (110) connected in parallel to said B decoder modules for receiving at least the non-redundant code bit streams from the medium and for introducing a delay that is equal to the delay incurred in said decoder modules and said shift register modules while also effecting a multiplication by the polynomial E(D);

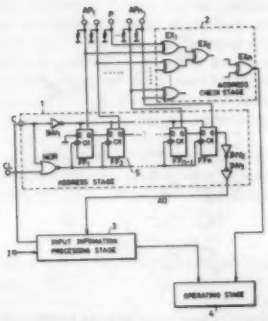
EXCLUSIVE-OR means (154) connected to outputs of said cross-connection device and of said delay means together with third multiplying means for correcting at least the non-redundant code bit streams with non-zero syndrome bit streams, and outputting the corrected code bit streams.

4,486,883

ADDRESS CHECK SYSTEM

Tsutomu Kanai, and Yoshio Kizaki, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1982, Ser. No. 345,404
Int. Cl.³ G06F 11/10
U.S. Cl. 371—67 7 Claims



1. An address check system for a transmission system having means for transmitting control and address information to at least one receiver, said address information being representable as a binary address-defining number, address entering and storing means associated with said receiver for storingly entering a local address as a binary electrical representation thereof in the form of local address-setting bits, address comparison means associated with said receiver for comparing said transmitted address-defining number with said local address, and control means associated with said receiver for blocking the passage of said control information responsively to detecting a mismatching condition by said address matching means, the improvement comprising:

said means for entering and storing said local address including means for entering said local address in a parallel line representation, said representation including said address-setting bits representing a binary number and further including one or more protocol-setting bits placed on a chosen one or more of said parallel lines;

protocol comparison means for selectively testing at least one of said local address-setting bits and at least one of said protocol-establishing bits to detect a protocol-matching condition therebetween according to a given protocol defined solely by said protocol comparison means and bearing no specific relationship to transmitted signals; and

means for actuating said control means to block said passage of said control information when a mismatch condition is detected by said protocol comparison means.

4,486,884

TUNABLE ANTI-STOKES RAMAN LASER

Jonathan C. White, Lincroft, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 10, 1982, Ser. No. 376,416
Int. Cl.³ H01S 3/30
U.S. Cl. 372—3 6 Claims

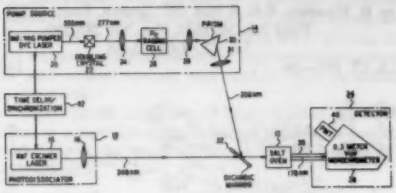
1. A tunable anti-Stokes Raman laser comprising

an alkali halide lasing medium (e.g., 12, 78) including a ground state, an intermediate state, and at least one metastable state;

photodissociating means (e.g., 10, 66, 68) for creating a population inversion between said ground state and a metastable state of said alkali halide lasing medium; and

anti-Stokes pump means (e.g., 14, 72, 76) for creating a transition between said metastable state and predetermined region near said intermediate state of said alkali

halide lasing medium, thereby creating a Raman lasing output from said predetermined region to said ground



state, where said predetermined region is varied to form said tunable anti-Stokes Raman laser.

4,486,885

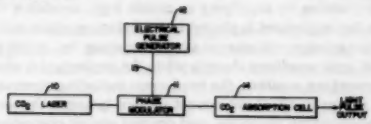
GENERATION OF SHORT AMPLIFIED PULSES OF LIGHT USING AN ABSORBING MEDIUM

Azriel Z. Genack, New York, N.Y., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 263,050, May 13, 1981,. This application Apr. 3, 1984, Ser. No. 596,072

Int. Cl.³ H01S *3/10*

U.S. Cl. 372—26 **10 Claims**



1. Apparatus for generating short light pulses including:

coherent radiation absorbing means for absorbing coherent radiation comprising an absorption cell containing an absorption medium having a predetermined line width;

coherent radiation directing means for directing coherent radiation having a predetermined amplitude onto said coherent radiation absorbing means; and

phase shifting means for shifting the phase of said coherent radiation while said coherent radiation directing means is directing said coherent radiation onto said coherent radiation absorbing means, said phase shifting means including operating means for operating said phase shifting means to shift the phase of said coherent radiation in a period of time less than the period of time determined by said line width of said absorbing medium, thereby producing a pulse of light from said coherent radiation absorbing means, said pulse of light having an amplitude which is greater than said predetermined amplitude.

4,486,886

APPARATUS FOR COOLING LASER WINDOWS

Stanley L. Ream, Columbus, Ohio, assignor to Laser Manufacturing Technologies, Inc., Columbus, Ohio

Filed Sep. 29, 1982, Ser. No. 427,975

Int. Cl.³ H01S *3/04*

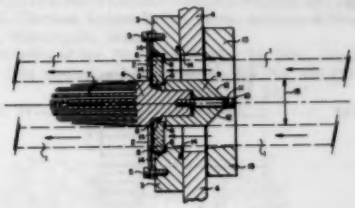
U.S. Cl. 372—34 **9 Claims**

1. An apparatus for cooling laser windows comprising:

a. an annular region of material transparent to laser radiation;

b. a means for cooling the outer circumference of said annular transparent region;

c. a cylindrical device: conductive to heat, fitting in the center of said annular region, making thermal contact with said inner window circumference and having a plurality of openings in a first side providing effective heat exchange, obscuring none of said transparent annular region, extending in part into the region on said first side of said window external to said laser wherein said cylindrical device is maintained in thermal contact with said inner window circumference by means of: (a) soft, compliant metal wires placed between said cylindrical device



and said inner window circumference; and (b) a means for maintaining compression on said compliant metal wires, extending in part into the region on the opposite second side of said window internal to said laser.

4,486,887

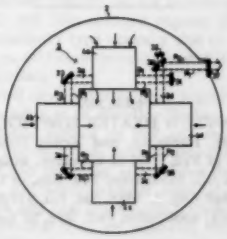
HIGH-POWER LASERS

Ethan D. Hoag, East Boston, and Glenn W. Zieders, Marblehead, both of Mass., assignors to Metalworking Lasers International Ltd., Neve Sharet, Israel

Filed Aug. 23, 1982, Ser. No. 410,594

Int. Cl.³ H01S *3/22*

U.S. Cl. 372—58 **21 Claims**



1. A high-power flowing-gas laser including a laser channel and means for producing a flow of a laser gas transversely across the laser channel; characterized in that said laser channel is folded to include at least two legs angularly disposed to each other in a common plane and having a single folding mirror between the two legs such that the laser rays through one leg, on the upstream side thereof with respect to the gas flowing transversely across said one leg, are reflected by said folding mirror so as to be transposed to the downstream side of the other leg with respect to the gas flowing transversely across the other leg.

4,486,888

FURNACE, ESPECIALLY A CERAMIC OR HEATING FURNACE

Theodor J. Sevink, Schaepmanstraat 54,, 3762 SV Soest, Netherlands

Filed Aug. 17, 1981, Ser. No. 293,731

Int. Cl.³ F27D *1/00, 11/02*

U.S. Cl. 373—130 **10 Claims**

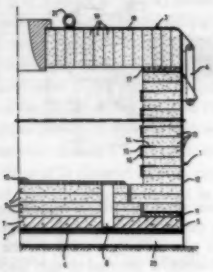
1. A furnace comprising:

first, second and third heat-insulating layers of felt (9, 13, 19);

a bottom plate construction (2) having said first heat-insulating layers of felt (9) formed on an upper surface thereof;

a jacket (1) having said second heat-insulating layers of felt (13) formed on an inner surface thereof;

a cap (3) mounted on an upper surface of said jacket for enclosing said furnace, said cap having said third heat-insulating layers of felt (19) on a lower surface thereof; and



strips of ceramic material (14) having a plurality of spaced tapered pins (15), said pins being inserted in said heat insulating layers and suspending electric resistance elements (22).

4,486,889

CONTINUOUS-FLOW HEATER FOR MOLTEN METALS

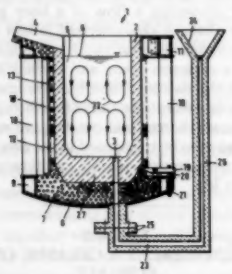
Fritz Hegewaldt, Herdecke, and Erwin Dötsch, Dortmund-Holzen, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Aug. 1, 1983, Ser. No. 519,096

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1982, 3229367

Int. Cl.³ F27D *3/14*

U.S. Cl. 373—142 **6 Claims**



1. Induction crucible furnace with means for feeding molten metal into the crucible and means for discharging molten metal from the crucible adapted for a continuous flow heater for molten metals for maintaining or increasing the temperature level of a metal melt in the crucible, said means for feeding comprising an inlet for feeding said molten metal into the crucible arranged below the bath level of the metal melt in the furnace.

4,486,890

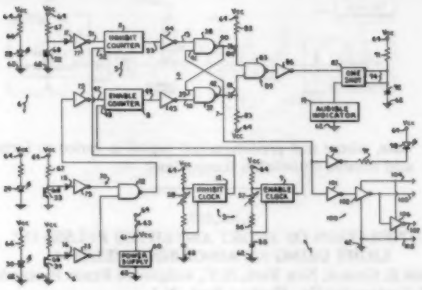
CONTROL ARRANGEMENT FOR AN ACREAGE COUNTER

Leo R. Hammes, R.R. 3, Box 151, Seneca, Kans. 66538

Filed Jul. 20, 1981, Ser. No. 285,389

Int. Cl.³ G01B *5/26*

U.S. Cl. 377—24 **14 Claims**



1. A control circuit for use with an acreage counter employed with an agricultural implement to monitor acreage worked, said control circuit causing the acreage counter to begin counting by supplying an enable logic condition thereto when the implement is placed in a working position and causing the acreage counter to cease counting by supplying an inhibit logic condition thereto when the implement is placed in a nonworking position, the implement including manual operating means to effect movement thereof between the working and nonworking positions, said control circuit comprising:

(a) bistable switch means operatively connected to an acreage counter and providing at an output of said switch means an enable logic condition when in a first state to activate said acreage counter and providing an inhibit logic condition when in a second state to deactivate said acreage counter;

(b) delay means connected to said switch means and providing a state changing signal thereto after a selected delay time beginning upon actuation of said delay means, said delay means allowing the adjustment of the position of the associated implement without changing the state of said switch means;

(c) actuation means connected to said delay means and cooperating with manual operating means of an agricultural implement to actuate said delay means

(d) said actuation means causes said delay means to initiate the running of said delay time in response to the placement of said manual operating means in a cultivate position; and

(e) said delay means cancels the running of said delay time and does not provide said state changing signal to said switch means in response to the placement of the operating means in a position other than the cultivate position before the end of said delay time.

4,486,891

CONTACT POINT TYPE MEASURING DEVICE

Teruo Kimoto; Yasuyuki Yamaguchi; Takeji Nishimura, and Satoshi Mizuno, all of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1982, Ser. No. 342,922

Claims priority, application Japan, Jan. 27, 1981, 56-10465; Jan. 27, 1981, 56-10466

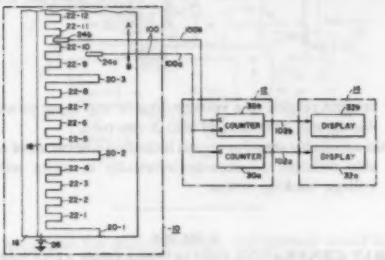
Int. Cl.³ G01B *7/00*

U.S. Cl. 377—24 **11 Claims**

1. A contact point type measuring device having a contact point type encoder having scale contact points arranged in a regular order in a required direction and brushes correspondingly moving along together with moving members against

said scale contact points in repetitive on and off contact with said scale contact points for supplying pulse type measured signals in accordance with the measured amount, a counter circuit counting the number of pulses of the measured signals, and a display section for the measured value for displaying the measured amount in a digital display in response to the counted value of said counter circuit, said contact type measuring device comprising:

scale contact points consisting of larger contact points arranged at a required distance and of small scale contact points dividing the larger scale contact point distance at a required pitch;



a counter circuit including a larger scale counter counting larger scale measured signals obtained from said larger scale contact points and a smaller scale counter counting small scale measured signals obtained from said small scale contact points and resetting such counted value by said larger scale measured signals; and

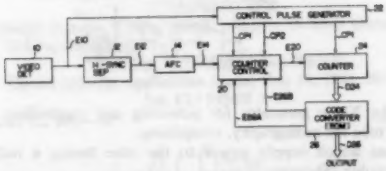
a display section for the measured value including a upper figure displayer for displaying counted value of said larger scale counter as upper figures and a lower figure displayer for displaying counted value of said smaller scale counter at lower figures.

4,486,892

SYNCHRONOUS SIGNAL GENERATOR

Akira Karijuku, Kumagaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 21, 1982, Ser. No. 400,406
Int. Cl.³ H04L 7/08
U.S. Cl. 377—43 **20 Claims**



1. A synchronous signal generator for generating a given cyclic signal in accordance with repetitively appearing specific phase positions of a reference signal inputted thereto, comprising:

control means responsive to said reference signal for detecting said specific phase positions, for accumulating frequencies of appearances of said specific phase positions at respective phase positions within a given period of time, and for providing a control signal when any of accumulated frequencies of appearances of said specific positions reaches to a given value from which the largest number of said accumulated frequencies is obtained; and

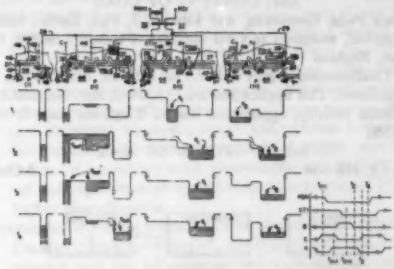
generator means coupled to said control means and being responsive to said control signal for generating said cyclic signal being forcibly corresponding to said control signal.

4,486,893

CAPACITIVE SUPPLEMENT MULTIPLIER APPARATUS

Craig L. Carrison, Golden Valley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 263,533, May 14, 1981, abandoned.
This application Mar. 15, 1984, Ser. No. 589,979
Int. Cl.³ G11C 19/28; H01L 29/78
U.S. Cl. 377—60 **15 Claims**



1. A monolithic integrated circuit for providing a distinct charge aggregation which contains a quantity of charge which is a selected fraction of a quantity of charge contained in another distinct charge aggregation, said circuit comprising:

a semiconductor material body of a first conductivity type except in selected regions thereof including first, second, third, fourth and fifth selected regions which are of a second conductivity type opposite that of said first conductivity type, said semiconductor material body having a first major surface;

a charge-coupled device floating gate regenerator having a conductor serving as an inverting floating gate separated from said major surface by first and second insulating layers with said inverting floating gate being across said first and second insulating layers from first and second portions of said semiconductor material body, respectively, where said first and second portions of said semiconductor material body are separated from one another by means sufficient to prevent a distinct charge aggregation in one of said first and second portions from being transferred into that one remaining, and wherein said charge-coupled device floating gate regenerator further has a conductor serving as a non-inverting floating gate separated from said first major surface by third and fourth insulating layers with said non-inverting floating gate being across said third and fourth insulating layers from third and fourth portions of said semiconductor material body, respectively, where said third and fourth portions of said semiconductor material body are separated from one another by means sufficient to prevent a distinct charge aggregation in one of said third and fourth portions from being transferred into that one remaining, and where said second and fourth portions of said semiconductor material body are separated from one another by means sufficient to prevent a distinct charge aggregation in one of said second and fourth portions from being transferred into that one remaining but where said first and third portions of said semiconductor material body are capable of passing charge from one to another through said semiconductor material body; and

a multiplier means including a capacitance selection gate separated from said first major surface by a fifth insulating layer and across from a portion of said semiconductor material body which is immediately adjacent to said first selected region, said non-inverting floating gate being conductively connected to said first selected region, whereby capacitance associated with said first selected

region supplements that associated with said non-inverting floating gate such that any charge occurring in said fourth portion of said semiconductor material body affects charge quantities occurring in said third portion of said semiconductor material body to an extent dependent on said capacitance associated with said first selected region as such capacitance is controlled by said capacitance selection gate.

4,486,894

METHOD OF AND APPARATUS FOR SENSING THE ASH CONTENT OF COAL

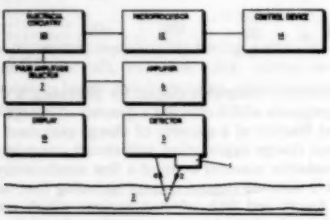
Dennis Page, Gateshead, and Edward J. Fox, Derby, both of England, assignors to Coal Industry (Patents) Limited, London, England

Continuation-in-part of Ser. No. 165,016, Jul. 1, 1980, abandoned. This application Jan. 15, 1982, Ser. No. 339,512

Claims priority, application United Kingdom, Aug. 7, 1979, 7927501

Int. Cl.³ G01N *23/203, 23/223*

U.S. Cl. 378—46 **5 Claims**



1. A method of sensing the ash in a granular coal sample which sample has a coal particle size of up to 5 cm. and a moisture content greater than 10% by weight, comprising the steps of:

bombarding the coal sample with radiation from a single nucleonic source which emits primary radiation in at least two spectrums of energy at around 46 KeV and around 13 KeV, the first spectrum around 46 KeV causing the coal sample to emit a first spectrum of secondary radiation, and the second spectrum around 13 KeV causing the coal sample to emit a second spectrum of secondary radiation and to emit fluorescent radiation characteristic of iron from iron atoms in the coal sample;

sensing the first and second spectrums of secondary radiation and the characteristic iron fluorescent radiation; and

determining from the sensed radiations the ash content of the coal sample.

4,486,895

X-RAY TUBE VOLTAGE INDICATOR

Richard L. Barrett, Norwalk, Conn., assignor to The Machlett Laboratories, Incorporated, Stamford, Conn.

Continuation of Ser. No. 167,997, Jul. 14, 1980, abandoned. This application Jan. 17, 1983, Ser. No. 458,415

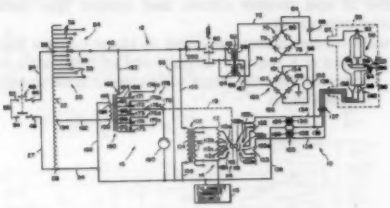
Int. Cl.³ H05G *1/32*

U.S. Cl. 378—98 **12 Claims**

1. An X-ray generator system comprising:

control circuitry having input means disposed for electrical connection to an input power line and output means connectable electrically to an X-ray tube for operation thereof, said circuitry including voltage select means and current select means for applying an initial voltage and a selected current, respectively, to said output means; and

voltage indicator means connected to the voltage select means and the current select means for indicating prior to operation of said tube actual voltage that will be applied to said X-ray tube during said operation, said voltage indicating means including voltage bucking means for subtracting from said initial voltage in accordance with said selected current an amount related to voltage losses in said control circuitry during said operation and including adjustable resistive means for subtracting from said initial voltage in accordance with said selected current an



amount related to a voltage drop in said input power line during said operation of said X-ray tube,

said adjustable resistive means including a network of adjustable resistors connected electrically in series with the voltage bucking means.

4,486,896

X-RAY GENERATOR INCORPORATING AUTOMATIC CORRECTION OF A DOSE-DETERMINING EXPOSURE PARAMETER

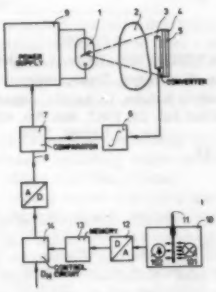
Detlev Richter, and Thomas Bürrig, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 9, 1982, Ser. No. 406,602

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1981, 3132057

Int. Cl.³ H05G *1/30*

U.S. Cl. 378—108 **7 Claims**



1. An X-ray generator for powering and controlling an X-ray tube for radiography, comprising:

means which supply power to the tube during a radiographic exposure;

means which measure the value of the radiation dose which is delivered to a radiographic medium during the exposure and which produce a signal indicative thereof;

means which compare the value of the radiation dose indicating signal with the value of a predetermined signal and which control one or more parameters of the power supplied to the tube in response to any deviation of the dose indicating signal from the predetermined signal;

means which measure the density of an image of a known test object which has been produced on a sample of the radiographic medium and which provide a signal indicative thereof; and

means which adjust the value of the predetermined signal in

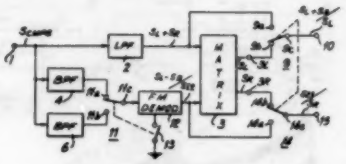
response to the value of the measured density signal in order to correct the exposure for variations in the effective sensitivity of the medium.

4,486,897

TELEVISION RECEIVER FOR DEMODULATING A TWO-LANGUAGE STEREO BROADCAST SIGNAL

Kunio Nagai, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,813
Claims priority, application Japan, Feb. 9, 1982, 57-16613[U]
Int. Cl.³ H04N 5/60; H04H 5/00
U.S. Cl. 381—2 **7 Claims**



1. Apparatus for demodulating a multiplexed sound signal comprised of a first sound signal formed by the sum of a first channel signal and a second channel signal, a second sound signal formed by the difference of said first channel signal and said second channel signal, and a third sound signal, comprising:

demodulation means for producing one of said second sound signal and third sound signal in response to said multiplexed sound signal;

selector means for selectively controlling said demodulation means to produce one of said second sound signal and third sound signal in response to said multiplexed sound signal;

matrix means for producing a stereo sound signal in response to said first and second sound signals;

output means; and

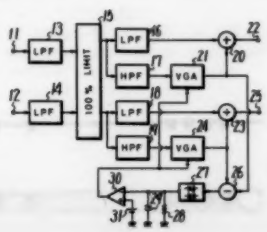
switch means for supplying said third sound signal to said output means when said selector means controls said demodulation means to produce said third sound signal and for supplying said stereo sound signal to said output means when said selector means controls said demodulation means to produce said second sound signal.

4,486,898

AMPLITUDE LIMITER FOR AM BROADCAST TRANSMITTER

Satoshi Yokoya, Chofu, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 9, 1982, Ser. No. 416,327
Claims priority, application Japan, Sep. 11, 1981, 56-143616
Int. Cl.³ H04H 5/00
U.S. Cl. 381—15 **31 Claims**



1. An amplitude limiter for use in an AM broadcast transmitter to minimize energy in the broadcasted signal outside an allocated broadcast bandwidth, said amplitude limiter comprising:

first and second input means for providing left-channel and right-channel signals within a predetermined frequency range;

respective low pass channels coupled to each of said input means, said low pass channels including low pass filter means having a predetermined upper cut-off frequency for passing said left-channel and right-channel signals, respectively, of frequencies below said cut-off frequency in the lower portion of said predetermined frequency range;

respective higher pass channels coupled to each of said input means, said higher pass channels including higher pass filter means having a predetermined lower cut-off frequency for passing said left-channel and right-channel signals, respectively, of frequencies above said predetermined lower cut-off frequency in an upper portion of said predetermined frequency range and variable gain amplifier means series-connected with said higher pass filter means for amplifying with controllable gain the left-channel and right-channel signals respectively passed by said higher pass channels;

respective summing means for summing the respective left-channel signals provided by the left-channel higher pass channel and the left-channel low pass channel and for summing the respective right-channel signals provided by the right-channel higher pass channel and the right-channel low pass channel; and

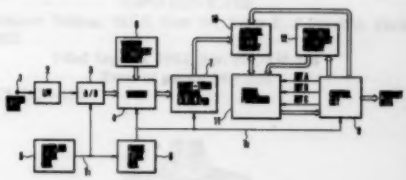
gain control signal generating means responsive to said left-channel and right-channel signals provided by said respective higher pass channels to produce a signal representing a frequency band-limited submodulation component of the AM signal to be broadcasted and for generating and supplying a gain reducing signal to said respective variable gain amplifier means when said produced signal exceeds a predetermined level.

4,486,899

SYSTEM FOR EXTRACTION OF POLE PARAMETER VALUES

Katsunobu Fushikida, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1982, Ser. No. 358,638
Claims priority, application Japan, Mar. 17, 1981, 56-37264; Aug. 10, 1981, 56-124095
Int. Cl.³ G10L 1/00
U.S. Cl. 381—36 **3 Claims**



1. A system for the extraction of pole parameter values comprising;

an autocorrelation value calculating circuit receiving an input voice signal through a time window, for calculating an autocorrelation value V_i(i=0, 1, 2, . . .) of the input voice signal within the time window;

a linear prediction coefficient memory circuit for storing linear prediction coefficients (α_1, α_2) corresponding to various pole parameter values;

a signal processor for receiving as its input the output value V_i of said autocorrelation value calculating circuit, performing thereon an arithmetic operation according to the

following formula using the prediction coefficients (α_1, α_2) supplied by said linear prediction coefficient memory circuit:

$$r_i=(1+\alpha_1^2+\alpha_2^2)V_i-(\alpha_1-\alpha_1\alpha_2)V_{i+1}-(\alpha_1-\alpha_1\alpha_2)V_{i-1}-\alpha_2V_{i-2}-\alpha_2V_{i+2}$$

and delivering an output (r_i) representative of an autocorrelation value of an output voice signal;

an autocorrelation value temporary storage circuit for storing the output of said signal processor;

a minimum value detecting circuit for detecting a minimum of the autocorrelation values stored in said storage circuit.

4,486,900

REAL TIME PITCH DETECTION BY STREAM PROCESSING

Richard V. Cox, Piscataway, and Ronald E. Crochiere, Berkeley Heights, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 30, 1982, Ser. No. 363,470

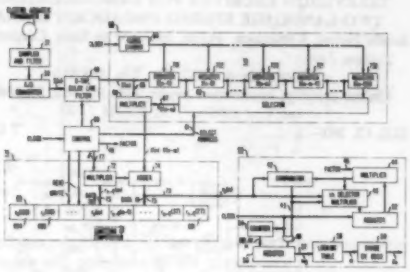
Int. Cl.[3] **G10L** *1/00*

U.S. Cl. 381—38 **12 Claims**

1. A method for detecting the pitch of a speech pattern, comprising the steps of:

sampling a speech pattern at spaced time intervals to form a series of sample signals representative of the pattern;

gating every Q^{th} sample, Q between 2 and 6, into a storage device, thereby storing a predetermined number of past samples, and



processing said original samples and said stored Q^{th} samples to generate a signal representative of the pitch of the speech pattern.

276,569

SPORT SHOES

Noboru Kohno, Mishinomiya, Japan, assignor to Mizuno Corporation, Osaka, Japan

Filed Dec. 3, 1980, Ser. No. 212,540

Claims priority, application Japan, Jun. 19, 1980, 55-24693; Jul. 3, 1980, 55-26618; Jul. 3, 1980, 55-26619; Jul. 3, 1980, 55-26621

Term of patent 14 years

U.S. Cl. D2—310

276,570

POLICE GRIPPER

William R. Black, Rte. 2, Halderson Rd., Bangor, Wis. 54614

Filed May 28, 1982, Ser. No. 383,031

Term of patent 14 years

U.S. Cl. D2—360

276,571

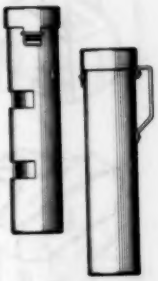
POUCH FOR STORING ELECTRICAL TIES

Dwight M. Fairchild, 1223 S. Ash, Ottawa, Kans. 66067

Filed Aug. 23, 1982, Ser. No. 410,853

Term of patent 14 years

U.S. Cl. D2—400



276,572

CANTEEN CASE

Christopher Bethea, 411 S. Gay St., Suite E, Knoxville, Tenn. 37902

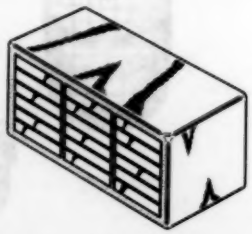
Filed Sep. 16, 1982, Ser. No. 418,734

Term of patent 14 years

U.S. Cl. D2—400

276,573
CAMERA CASE
Kazuo Yamamoto, Fuchu, and Michio Imada, Kodaira, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jul. 30, 1982, Ser. No. 403,866
Claims priority, application Japan, Feb. 23, 1982, 57-7527
Term of patent 14 years
U.S. Cl. D3—33

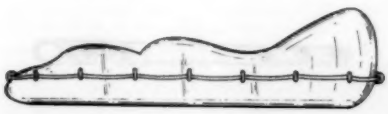
276,574
CONTAINER FOR TAPE CASSETTES
Peter Ackeret, Küsnacht, Switzerland, assignor to IDN Inventions and Development of Novelties, Chur, Switzerland
Filed Apr. 26, 1979, Ser. No. 34,162
The portion of the term of this patent subsequent to Aug. 4, 1995, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—407



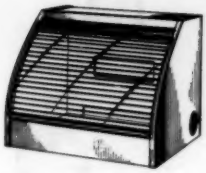
276,575
CHAIR
Charles D. Helmboldt, Caledonia Township, Kent County, Mich., assignor to Haworth Mfg., Inc., Holland, Mich.
Filed Sep. 29, 1980, Ser. No. 192,143
Term of patent 14 years
U.S. Cl. D6—366

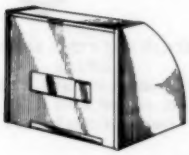
276,576
CHAIR
Charles D. Helmboldt, Caledonia Township, Kent County, Mich., assignor to Haworth Mfg., Inc., Holland, Mich.
Filed Sep. 29, 1980, Ser. No. 227,554
The portion of the term of this patent subsequent to Nov. 27, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366

276,577
FLOTABLE LOUNGE CHAIR OR SIMILAR ARTICLE
Craig H. Fitch, 12100 Mellow Wood Dr., Saratoga, Calif. 95070
Filed Sep. 8, 1981, Ser. No. 300,267
Term of patent 14 years
U.S. Cl. D6—361

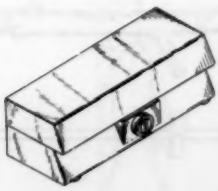


276,578
ACOUSTICAL ENCLOSURE FOR A PRINTER
Alfred Kwiecinski, Fairfield, Ohio, assignor to Hamilton Sorter Co., Inc., Fairfield, Ohio
Filed Aug. 10, 1981, Ser. No. 291,268
Term of patent 14 years
U.S. Cl. D14—114

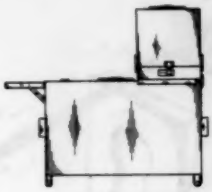


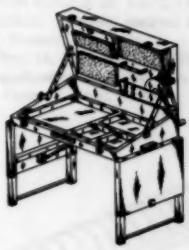


276,579
FILM DISPENSER
Marc J. Gordon, Boston, Mass., and Joseph J. Davis, Lima, Ohio, assignors to RGG, Inc., Boston, Mass.
Filed Feb. 12, 1982, Ser. No. 348,431
Term of patent 14 years
U.S. Cl. D6—408

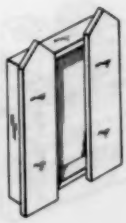


276,580
COMBINED COMPUTER CARRYING CASE AND COLLAPSIBLE DESK
Elliott Mandl, 2928 Mandalay Beach Rd., Wantagh, N.Y. 11793
Filed Apr. 6, 1981, Ser. No. 251,244
Term of patent 14 years
U.S. Cl. D6—397



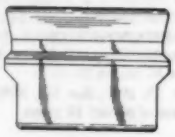


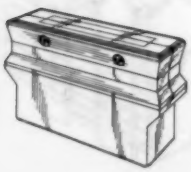
276,581
SHADOW BOX
Harold K. McIntire, Jr., 1305 Upper Bellbrook Rd., Xenia, Ohio 45385
Filed Mar. 19, 1982, Ser. No. 359,926
Term of patent 14 years
U.S. Cl. D6—303



276,582
SHADOW BOX
Harold K. McIntire, Jr., 1305 Upper Bellbrook Rd., Xenia, Ohio 45385
Filed Mar. 19, 1982, Ser. No. 359,928
Term of patent 14 years
U.S. Cl. D6—303

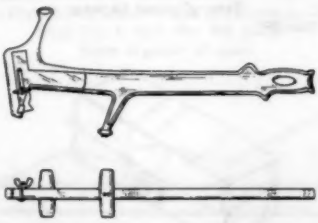
276,583
HAND OPERATED MEAT TENDERIZER
Andre R. Jaccard, Holland, N.Y., assignor to Jaccard Corporation, Orchard Park, N.Y.
Filed May 14, 1982, Ser. No. 378,102
The portion of the term of this patent subsequent to Dec. 11, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—101





276,584
INSULATED JUG
Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Anso Zimmermann Isolierflaschen, Fed. Rep. of Germany
Filed Sep. 29, 1981, Ser. No. 306,900
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1981, MR 150
Term of patent 14 years
U.S. Cl. D7—317

276,585
PLASTIC BUCKET LID REMOVAL TOOL
John DiFede, 24878 Tioga Rd., Hayward, Calif. 94544
Filed Jan. 13, 1983, Ser. No. 457,564
Term of patent 14 years
U.S. Cl. D8—40



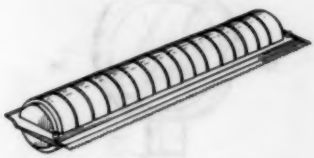
276,586
DETACHABLE HANDLE FOR PAINT CANS OR THE LIKE
Arthur W. Hanna, 9706 Wheatland Ave., Sunland, Calif. 91040
Filed Sep. 20, 1982, Ser. No. 419,916
Term of patent 14 years
U.S. Cl. D8—320

276,587
COMBINED SWITCH AND FACE PLATE OR SIMILAR ARTICLE
Tonia B. White, 9228 S. Green St., Chicago, Ill. 60620
Filed Jul. 9, 1982, Ser. No. 396,728
Term of patent 14 years
U.S. Cl. D8—353

276,588
HOLDER AND GROUND ANCHOR UNIT FOR CYLINDRICAL FENCE POSTS
David G. Fambrough, 13205 South Hills Dr., Reno, Nev. 89511
Filed Aug. 5, 1982, Ser. No. 405,683
Term of patent 14 years
U.S. Cl. D8—373

276,589
GRIPPER TIE
Barry Tindell, 830 N. Lake St., Burbank, Calif. 91502
Filed Jul. 14, 1982, Ser. No. 398,304
Term of patent 14 years
U.S. Cl. D8—394

276,590
DISPENSER FOR ROLLS OF TAPE OR THE LIKE
Michael Lobel, Caulfield, Australia, assignor to Serv-Pack Proprietary Limited, Victoria, Australia
Filed Jun. 16, 1982, Ser. No. 389,044
Claims priority, application Australia, Feb. 5, 1982, 86417
Term of patent 14 years
U.S. Cl. D9—341



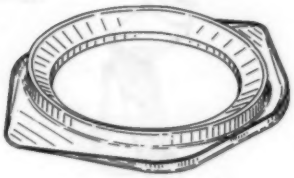
276,591
BOTTLE
Jacques Guiguizian, Haverhill, Mass., assignor to Savin Corporation, Stamford, Conn.
Filed Sep. 8, 1982, Ser. No. 415,985
Term of patent 14 years
U.S. Cl. D9—341

276,592
PLASTIC CONTAINER FOR LIQUIDS
John A. Cox, Bethel Park, Pa., assignor to Liqui-Box Corporation, Worthington, Ohio
Filed Feb. 26, 1981, Ser. No. 238,397
Term of patent 14 years
U.S. Cl. D9—383

276,593
COMBINED BOTTLE AND CAP
Clive Chajet, New York, N.Y., assignor to Plough, Inc., Memphis, Tenn.
Filed Mar. 31, 1982, Ser. No. 364,070
Term of patent 14 years
U.S. Cl. D9—386

276,594
CONTAINER FOR CANDY OR THE LIKE
William K. Fahey, Longwood, Fla., and Martin J. Wolff, No. Providence, R.I., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Jan. 12, 1982, Ser. No. 338,947
Term of patent 14 years
U.S. Cl. D9—420

276,595
PAINT CAN ATTACHMENT
Amy Miller, 9510 N. Hamlin, Evanston, Ill. 60203
Filed Sep. 30, 1982, Ser. No. 431,133
Term of patent 14 years
U.S. Cl. D9—434



276,596
HINGED CLASP FOR A BAG
Joseph G. Kisha, 1604-A Beekman Pl., NW., Washington, D.C. 20009
Filed Sep. 20, 1982, Ser. No. 420,376
Term of patent 14 years
U.S. Cl. D9—435

276,597
BOTTLE CAP
Ned Harris, New York, N.Y., assignor to American Cyanamid Co., Stamford, Conn.
Filed Sep. 27, 1982, Ser. No. 423,882
Term of patent 14 years
U.S. Cl. D9—435

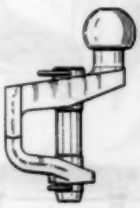
276,598
SEALING CAP FOR A BEVERAGE BOTTLE
Connice W. Bagwell, Rte. 2, Box 346, Somerville, Ala. 35670
Filed Jul. 9, 1982, Ser. No. 396,793
Term of patent 14 years
U.S. Cl. D9—443

276,599
COMBINED MUSICAL CAR HORN AND SECURITY ALARM
Marc H. Segan, 154 W. 70th St., New York, N.Y. 10023, and Sayre Swarztrauber, 301 E. 79th St., New York, N.Y. 10024
Filed Jul. 28, 1982, Ser. No. 402,645
Term of patent 14 years
U.S. Cl. D10—120

276,600
PASSENGER CAR
Masahito Nakano, and Yusuke Saitoh, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 25, 1982, Ser. No. 351,420
Claims priority, application Japan, Aug. 25, 1981, 56/37356
Term of patent 14 years
U.S. Cl. D12—92

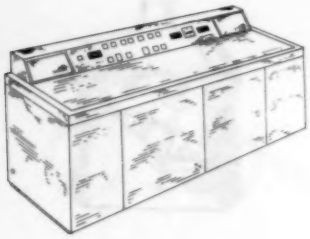
276,601
SET OF BICYCLE REFLECTOR PANELS
Marc Smith, 1224 N. Orange Grove #4, Holly, Calif. 90046, and Jerry Valdez, 1620 Armitage St., Los Angeles, Calif. 90026
Filed Jun. 4, 1982, Ser. No. 384,983
Term of patent 14 years
U.S. Cl. D12—114

276,602
COMBINED TOWING COUPLING AND REMOVABLE PIN
Barry Dixon-Bate, Christleton, England, assignor to B. Dixon-Bate Limited, Cheshire, England
Filed Oct. 2, 1981, Ser. No. 308,206
Term of patent 14 years
U.S. Cl. D12—162

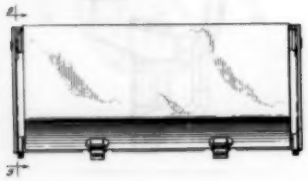


276,603
HELICOPTER STEP
Robert B. McNab; David W. Kent, and James A. Wolfe, all of Box 1177, Blountville, Tenn. 37617
Filed Feb. 13, 1980, Ser. No. 121,122
Term of patent 14 years
U.S. Cl. D12—345

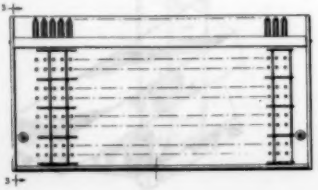
276,604
MOTOR GENERATOR CONSOLE
Dagmar King, Redondo Beach, Calif., assignor to Sweinhart Electric Co., Inc., Gardena, Calif.
Filed Dec. 10, 1981, Ser. No. 329,309
Term of patent 14 years
U.S. Cl. D13—3



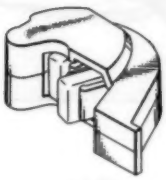
276,605
TELEPHONE ATTENUATION BLOCK OR SIMILAR ARTICLE
Helmut Neuwirth, Garden City, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.
Filed Jul. 19, 1982, Ser. No. 399,379
Term of patent 14 years
U.S. Cl. D13—24



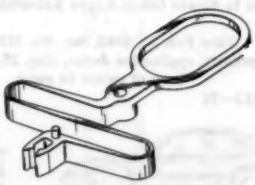
276,606
HORIZONTAL TYPE TELEPHONE PROTECTOR BLOCK
Helmut Neuwirth, Garden City, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.
Filed Jul. 12, 1982, Ser. No. 397,424
Term of patent 14 years
U.S. Cl. D13—24



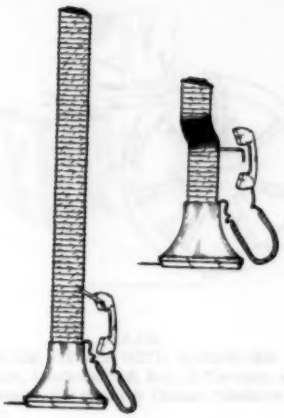
276,607
CLEANING CARTRIDGE FOR A CASSETTE CLEANER FOR AN AUDIO OR VIDEO PLAYER/RECORDER
Eivind Clausen, and James D. Allsop, both of Bellingham, Wash., assignors to Allsop, Inc., Bellingham, Wash.
Filed Jan. 7, 1982, Ser. No. 337,770
Term of patent 14 years
U.S. Cl. D14—11



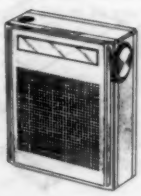
276,608
WIPER ARM FOR CASSETTE CLEANER FOR AN AUDIO PLAYER/RECORDER
Eivind Clausen, and James D. Allsop, both of Bellingham, Wash., assignors to Allsop, Inc., Bellingham, Wash.
Filed Jan. 7, 1982, Ser. No. 337,938
Term of patent 14 years
U.S. Cl. D14—11



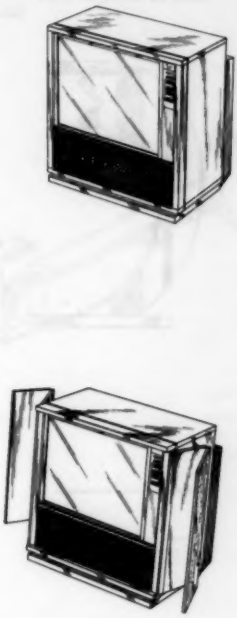
276,609
EXPANSION PHONE
Joel S. Schwartz, 508 Charles Ave., Barrington, N.J. 08007
Filed Oct. 22, 1982, Ser. No. 435,925
Term of patent 14 years
U.S. Cl. D14—53



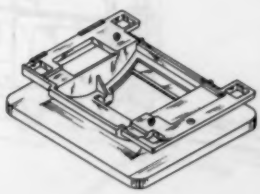
276,610
RADIO RECEIVER
Takao Okada, Kyoto; Manao Nakamura, Ikoma, and Benito Mishiro, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 21, 1982, Ser. No. 390,600
Claims priority, application Japan, Dec. 23, 1981, 56-58521
Term of patent 14 years
U.S. Cl. D14—71



276,611
PROJECTION TELEVISION RECEIVER
Akira Takahashi, Sayama; Tooru Higashihara, Tokyo; Kazuyuki Tsuburaya, Kodaira, and Takashi Fujii, Hino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 3, 1982, Ser. No. 384,516
Claims priority, application Japan, Jan. 20, 1982, 57-1432; Jan. 20, 1982, 57-1433
Term of patent 14 years
U.S. Cl. D14—82

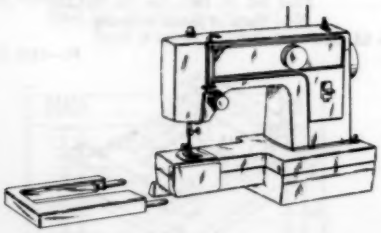


276,612
VIDEO DISPLAY TERMINAL ADJUSTABLE SUPPORT
Harry J. McVicker, Pottstown, Pa.; Andrew J. Miller, Salt Lake City, Utah; Alvin J. Noker, Bountiful, Utah, and Richard F. Saurer, Salt Lake City, Utah, assignors to Sperry Corporation, New York, N.Y.
Filed Jul. 14, 1981, Ser. No. 283,253
Term of patent 14 years
U.S. Cl. D14—114

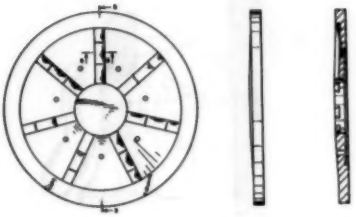


276,613
BEAN CUTTER FOR ATTACHMENT TO AN AGRICULTURAL IMPLEMENT
John P. Pickett, Murtaugh, Id.
Filed Nov. 5, 1981, Ser. No. 318,543
Term of patent 14 years
U.S. Cl. D15—28

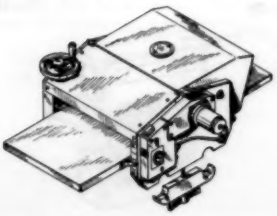
276,614
COMBINED SEWING MACHINE AND WORK SUPPORT EXTENSION
George D. La Police, Somerville, and Michael P. Ballone, New Providence, both of N.J., assignors to The Singer Company, Stamford, Conn.
Filed Apr. 22, 1982, Ser. No. 371,032
Term of patent 14 years
U.S. Cl. D15—69



276,615
IMPELLER WHEEL FOR AN ABRASIVE BLASTING MACHINE
William G. G. Tutton, Belper, England, assignor to Auto Alloys R&D Limited, Derbyshire, England
Filed May 13, 1980, Ser. No. 149,553
Claims priority, application United Kingdom, Nov. 13, 1979, 992340
Term of patent 14 years
U.S. Cl. D15—126



276,616
PLANER
John G. Legler; Edward A. Irelan, both of Columbia, Mo., and Michael J. Duwell, Columbus, Ohio, assignors to Shopsmith, Inc., Dayton, Ohio
Filed Aug. 16, 1982, Ser. No. 409,758
Term of patent 14 years
U.S. Cl. D15—127

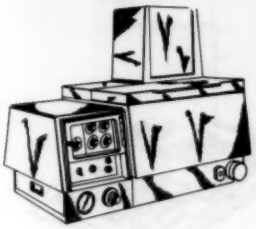


276,617

APPARATUS FOR MELTING AND DISPENSING THERMOPLASTIC MATERIAL

Charles H. Scholl, Duluth; Peter J. Petrecca, Atlanta; Paul S. Frates, Lawrenceville, all of Ga., and Richard R. Lewellen, Wooster, Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Jul. 8, 1982, Ser. No. 396,401
Term of patent 14 years
U.S. Cl. D15—144

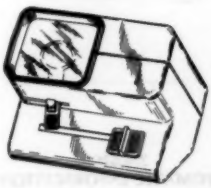


276,618

SLIDE VIEWER WITH MAGNIFIER

Rudolph Hanke, Monheim, Fed. Rep. of Germany, assignor to Hama Hamaphot KG Hanke & Thomas, Monheim, Fed. Rep. of Germany

Filed Apr. 14, 1982, Ser. No. 368,282
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1982, MR480
Term of patent 14 years
U.S. Cl. D16—17

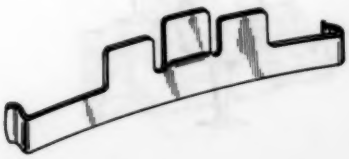


276,619

FILM RETAINER CLIP

Gerald J. Wilson, 3938 Patrick Henry Dr., Agoura, Calif. 91301

Filed Apr. 12, 1982, Ser. No. 367,434
Term of patent 14 years
U.S. Cl. D16—38

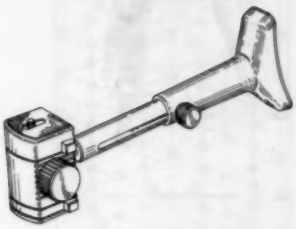


276,620

SHOULDER SUPPORT FOR PHOTOGRAPHIC EQUIPMENT

Rudolph Hanke, Monheim, Fed. Rep. of Germany, assignor to Hama Hamaphot KG Hanke & Thomas, Monheim, Fed. Rep. of Germany

Filed Apr. 14, 1982, Ser. No. 368,283
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1982, MR-482
Term of patent 14 years
U.S. Cl. D16—44



276,621

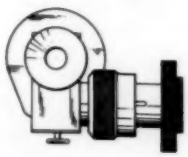
COMBINED CAMERA GRIP AND TRIPOD

Rudolph Hanke, Monheim, Fed. Rep. of Germany, assignor to Hama Hamaphot KG Hanke & Thomas, Monheim, Fed. Rep. of Germany

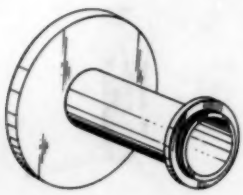
Filed May 26, 1982, Ser. No. 382,187
Term of patent 14 years
U.S. Cl. D16—45

276,622
TRIPOD
Paul C. Mooney, Northbrook, Ill., assignor to Quick-Set, Incorporated, Northbrook, Ill.
Filed Nov. 18, 1982, Ser. No. 442,853
Term of patent 14 years
U.S. Cl. D16—45

276,623
BEAM SPLITTING ADJUSTABLE OPTICAL COUPLER
Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., New York, N.Y.
Filed Jun. 1, 1982, Ser. No. 383,726
Term of patent 14 years
U.S. Cl. D16—130

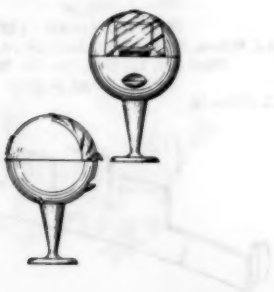


276,624
FIXED DIRECT ENDOSCOPIC OPTICAL COUPLER
Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., New York, N.Y.
Filed Jun. 1, 1982, Ser. No. 383,727
Term of patent 14 years
U.S. Cl. D16—130



276,625
DESK-TOP ELECTRONIC CALCULATOR
Nobuo Kikuchi, Tokyo, and Kazuyoshi Odagawa, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 18, 1982, Ser. No. 434,755
Claims priority, application Japan, Apr. 21, 1982, 57-17285
Term of patent 14 years
U.S. Cl. D18—7

276,626
COMBINED AUTOMATIC INFORMATION TERMINAL AND VENDING MACHINE
Lawrence B. Lockwood, 5935 Folsom, La Jolla, Calif. 92037
Filed Sep. 14, 1981, Ser. No. 301,549
Term of patent 14 years
U.S. Cl. D20—2



276,627

DISPENSING MACHINE OR THE LIKE

Fred C. Ducker, and Steve C. Rhodes, both of Myrtle Beach, S.C., assignors to Automatic Vending, Inc., Myrtle Beach, S.C.

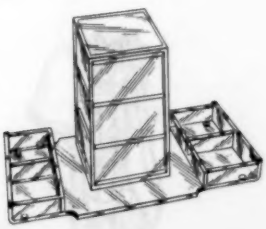
Filed May 17, 1982, Ser. No. 378,859
Term of patent 14 years
U.S. Cl. D20—1

276,628

ADVERTISING DISPLAY APPARATUS

Stanley Morris, 13 Woodside Rd., Springfield, N.J. 07081

Filed Jul. 30, 1982, Ser. No. 403,576
Term of patent 14 years
U.S. Cl. D20—19

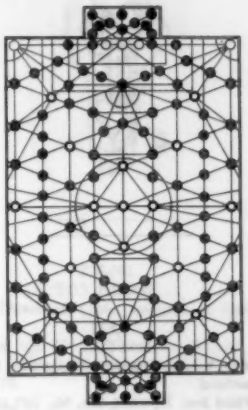


276,629

SOCCER GAME BOARD

János Boros, Celldömölk, Hungary, assignor to Plasztolus Műanyagfeldolgozó és Játékkészitö I.Sz, Szarvas, Hungary

Filed Sep. 28, 1981, Ser. No. 334,061
Claims priority, application Hungary, Mar. 26, 1981, 773/81
Term of patent 14 years
U.S. Cl. D21—27

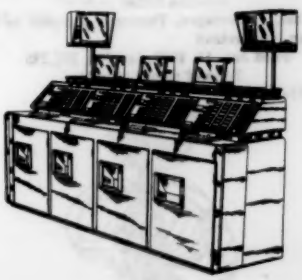


276,630

GAMBLING MACHINE

Bernard Gimbel, Saddle River, N.J., assignor to Video Turf Incorporated, New York City, N.Y.

Filed Feb. 26, 1982, Ser. No. 352,937
Term of patent 14 years
U.S. Cl. D21—37



276,631
TABLE SOCCER PLAYING FIGURE
Calvin E. McCloud, Fort Worth, Tex., assignor to Tornado Table Soccer, Inc., Fort Worth, Tex.
Filed Jun. 16, 1982, Ser. No. 389,019
Term of patent 14 years
U.S. Cl. D21—51

276,632
RATTLE
Erik P. Tapdrup, Virum, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Jun. 11, 1982, Ser. No. 387,230
Term of patent 14 years
U.S. Cl. D21—65

276,633
RATTLE
Jacob Nielsen, Copenhagen, Denmark, assignor to Interlego A.V., Baar, Switzerland
Filed Jun. 11, 1982, Ser. No. 387,285
Term of patent 14 years
U.S. Cl. D21—65

276,634
TOY CASTLE
Benjamin D. Pope, 831 Jewell, Ferndale, Mich. 48220
Filed Aug. 20, 1981, Ser. No. 294,518
Term of patent 14 years
U.S. Cl. D21—114

276,635
TOY GOAT
Valerie Daugherty, Alta Loma, Calif., assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,830
Term of patent 14 years
U.S. Cl. D21—148

276,636
TOY CELERY
Terry Paczko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,656
Term of patent 14 years
U.S. Cl. D21—155

276,637
TOY BANANA
Terry Paczko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,827
Term of patent 14 years
U.S. Cl. D21—155

276,638
TOY OCTOPUS
Valerie Daugherty, Alta Loma, Calif., assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,662
Term of patent 14 years
U.S. Cl. D21—157

276,639
TOY DOG
Valerie Daugherty, Alta Loma, Calif., assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,659
Term of patent 14 years
U.S. Cl. D21—161

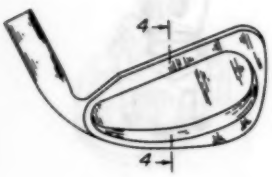
276,640
TOY CAT
Terry Paczko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,654
Term of patent 14 years
U.S. Cl. D21—163

276,641
TOY HORSE
Terry Paczko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,829
Term of patent 14 years
U.S. Cl. D21—165

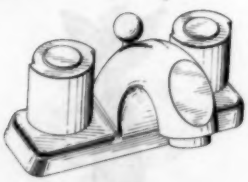
276,642
DOLL
Chang Am Koh, 12-1, Bonseong Dong, Jinju, Kyung, Namdo, Rep. of Korea
Filed Jun. 21, 1982, Ser. No. 390,634
Term of patent 14 years
U.S. Cl. D21—168

276,643
TOY MOUSE
Terry Paczko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,657
Term of patent 14 years
U.S. Cl. D21—188

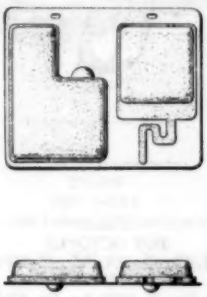
276,644
GOLF CLUB HEAD
Karsten Solheim, 501 W. Wakonda La., Phoenix, Ariz. 85023
Filed Sep. 29, 1982, Ser. No. 428,317
Term of patent 14 years
U.S. Cl. D21—220



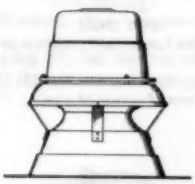
276,645
LAVATORY FAUCET
Nazzareno Piesco, Milan, Italy, assignor to F.I.R. Rubinetterie S.p.A., Milan, Italy
Filed Aug. 18, 1982, Ser. No. 409,218
Claims priority, application Italy, Mar. 29, 1982, 21370 B/82
Term of patent 14 years
U.S. Cl. D23—25



276,646
IN-TANK TOILET BOWL CLEANING DEVICE
Walter M. Ronayne, Westfield, N.J., assignor to American Home Products Corporation, New York, N.Y.
Filed Aug. 23, 1982, Ser. No. 410,776
Term of patent 14 years
U.S. Cl. D23—69



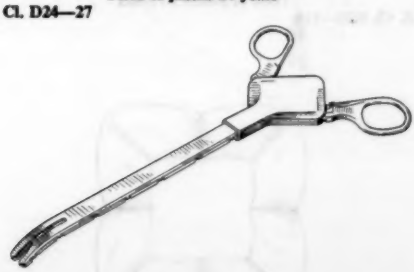
276,647
ROOF EXHAUSTER
George M. Breidert, San Fernando, Calif., assignor to The G. C. Breidert Company, San Fernando, Calif.
Filed Oct. 8, 1982, Ser. No. 433,412
Term of patent 14 years
U.S. Cl. D23—153



276,648
DENTAL X-RAY FILM HOLDER
Charles F. Stevenson, Elgin, Ill., assignor to Rinn Corporation, Elgin, Ill.
Filed Jul. 2, 1982, Ser. No. 394,623
Term of patent 14 years
U.S. Cl. D24—2

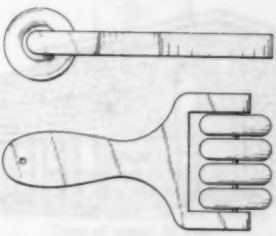
276,649
SURGICAL CANNULA
George P. Honkanen, North Scituate; John C. Strahan, Arlington, and Philip R. Lichtman, Newton, all of Mass., assignors to Acufex Microsurgical Inc., Norwood, Mass.
Filed Oct. 24, 1983, Ser. No. 544,554
Term of patent 14 years
U.S. Cl. D24—8

276,650
SURGICAL CLIP APPLIER
David T. Green, Norwalk; Paul O. Rawson, Jr., Easton, and Richard H. Yagami, Bridgewater, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Sep. 30, 1982, Ser. No. 429,195
Term of patent 14 years
U.S. Cl. D24—27



276,651
ADJUSTABLE SCALP HYPOTHERMIA CAP
Michael Fischer, Winnetka, Ill., assignor to Scholl, Inc., Memphis, Tenn.
Filed Mar. 31, 1982, Ser. No. 364,068
Term of patent 14 years
U.S. Cl. D24—43

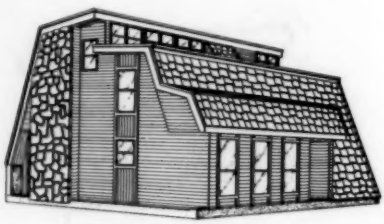
276,652
BODY MASSAGER
Judith T. O'Brien, and Harold E. O'Brien, both of 4801 Thompson Ave., Oklahoma City, Okla. 73105
Filed Jul. 6, 1982, Ser. No. 395,456
Term of patent 14 years
U.S. Cl. D24—36



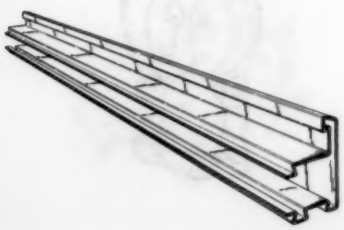
276,653
TOY ELEPHANT TEETHER
Valerie Daugherty, Alta Loma, Calif., assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,655
Term of patent 14 years
U.S. Cl. D24—45

276,654
MEDICAL AEROSOL INHALATION DEVICE
Kaija A. Snellman-Wasenius, Kallbäck, and Risto Virtanen, Nurmijärvi, both of Finland, assignors to Aktiebolaget Draco, Sweden
Filed Mar. 11, 1982, Ser. No. 357,045
Claims priority, application Sweden, Sep. 15, 1981, 81-2008
Term of patent 14 years
U.S. Cl. D24—62

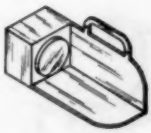
276,655
MANSARD STYLE BUILDING STRUCTURE
Courtney J. Hanson, Hastings, Nebr., and Tony Snider, Lewisville, Tex., assignors to Tri-Steel Structures, Inc., Denton, Tex.
Filed Dec. 21, 1982, Ser. No. 451,775
Term of patent 14 years
U.S. Cl. D25—25



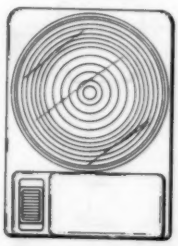
276,656
FRAME MEMBER FOR A WINDOW AND THE LIKE
Wictor C. O. Lindström, Parkgatan 39 D, 244 02 Furulund, Sweden
Filed May 7, 1982, Ser. No. 375,966
Claims priority, application Sweden, Nov. 9, 1981, 81-2579
Term of patent 14 years
U.S. Cl. D25—74



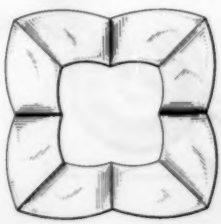
276,657
PORTABLE NAVIGATION LIGHT SYSTEM FOR BARGES
Raymond H. Duthu, P.O. Box 1007, Marrero, La. 70072
Filed Jun. 14, 1982, Ser. No. 388,450
Term of patent 14 years
U.S. Cl. D26—50



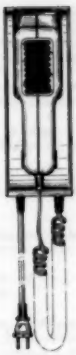
276,658
COMBINED WARNING FLASHER AND FLASHLIGHT
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Jun. 15, 1982, Ser. No. 388,711
Claims priority, application United Kingdom, Apr. 14, 1982, 1 006 137
Term of patent 14 years
U.S. Cl. D26—37

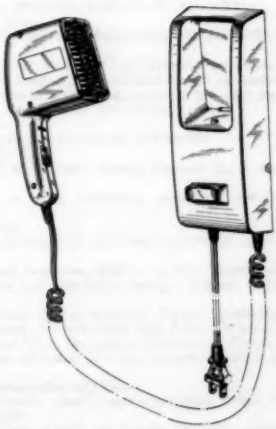


276,659
OMNIDIRECTIONAL REFLECTOR
Bertil Habro, Lidingö , Sweden, assignor to Roshamn Industri AB, Sweden
Filed Mar. 25, 1982, Ser. No. 361,775
Claims priority, application Sweden, Sep. 30, 1981, 81-2145
Term of patent 14 years
U.S. Cl. D26—118

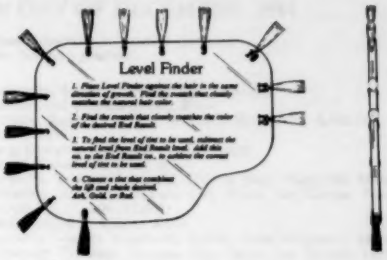


276,660
HAIR DRYER
Emel J. Glicksman, 316 Greenway Rd., Ridgewood, N.J. 07450
Filed Sep. 30, 1982, Ser. No. 432,115
Term of patent 14 years
U.S. Cl. D28—15

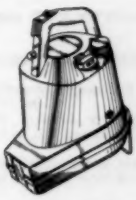




276,661
HAIR COLOR COMPARISON DEVICE
Michael L. Cafazzo, 14090 Fenton La., Sylmar, Calif. 91342
Filed Mar. 26, 1982, Ser. No. 362,226
Term of patent 14 years
U.S. Cl. D28—20



276,662
PORTABLE PNEUMATIC SWEEPER
Gerhard Zerrer, Korb; Hans Trumpf, Leutenbach, and Karl-Erich Koch, Neu-Ulm, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany
Filed Jan. 27, 1982, Ser. No. 343,250
Term of patent 14 years
U.S. Cl. D32—23



276,663
TRASHCAN HOLDER
Flagg L. Warren, R.R. 3, Box 156, Manvel, Tex. 77578
Filed Jun. 10, 1982, Ser. No. 386,867
Term of patent 14 years
U.S. Cl. D34—6

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TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF DECEMBER, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See*—
Henricson, Kaj O., 4,485,646, Cl. 68-18.00F.
Moilanen, Urpo, 4,485,705, Cl. 83-39.000.

A. E. Staley Manufacturing Company: *See*—
Bradford, Marion M.; Orthoefer, Frank T.; and Wright, Kenneth N., 4,486,458, Cl. 426-618.000.

A. O. Smith Harvestore Products Inc.: *See*—
Silverthorn, Charles R.; and Sancken, Ernest H., 4,485,977, Cl. 241-230.000.

AB Kompositprodukter S.K.F.M.: *See*—
Lindgren, Mats E. G., 4,485,614, Cl. 57-58.520.

AB Volvo: *See*—
Hass, Bertil, 4,485,683, Cl. 73-862.530.
Radbo, Berndt E.; and Janiszewski, Grzegorz K., 4,485,905, Cl. 192-103.00A.

Abe, Masaharu: *See*—
Fushiki, Yasuo; Oizumi, Masayuki; Abe, Masaharu; and Watanabe, Makoto, 4,486,505, Cl. 428-416.000.

Abe, Ryozo: *See*—
Sagiyama, Hiroyuki; Abe, Ryozo; and Sakakibara, Susumu, 4,486,790, Cl. 358-342.000.

Abe, Yoritsune: *See*—
Kobayashi, Nobuyuki; Abe, Yoritsune; Shibata, Katuo; and Watanabe, Yukio, 4,486,482, Cl. 428-69.000.

Abe, Yoshiaki; and Watanabe, Hiroshi, to Kao Soap Co, Ltd. Hair rinse composition. 4,486,406, Cl. 424-70.000.

Abe, Yoshihiro: *See*—
Sakurai, Kiyoshi; Ishi, Akira; and Abe, Yoshihiro, 4,486,320, Cl. 252-12.600.

Abel, Irving R., to Honeywell Inc. Switch-while-scan optical system. 4,486,662, Cl. 250-334.000.

Abraham, Dennis G.; and Gallman, Thomas W., to International Business Machines Corporation. Image compression systems. 4,486,784, Cl. 358-261.000.

Aburaki, Shimpei: *See*—
Narita, Yukio; Iimura, Seiji; Aburaki, Shimpei; Okumura, Jun; and Naito, Takayuki, 4,486,586, Cl. 544-022.000.

Abys, Joseph A.; and Trop, Harvey S., to AT&T Bell Laboratories. Palladium plating prodedure. 4,486,274, Cl. 204-44.000.

Ackermann, Peter: *See*—
Wehner, Wolfgang; and Ackermann, Peter, 4,486,424, Cl. 424-245.000.

Ackert, Robert J.; Witty, Robert W.; and Crozier, Peter A., to Algoma Steel Corporation Limited, The. Method for the production of improved railway rails by accelerated cooling in line with the production rolling mill. 4,486,248, Cl. 148-145.000.

Acrison, Inc.: *See*—
Ricciardi, Ronald J., 4,485,973, Cl. 239-659.000.

Adams, Kenneth D.: *See*—
Marsh, Walter H. W.; and Adams, Kenneth D., 4,485,755, Cl. 112-292.000.

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Adlhart, Otto J.: *See*—
Cohn, Johann Gunther E.; and Adlhart, Otto J., 4,486.276, Cl. 204-98.000.

Adman, Nils G.; and Jacobsson, Rolf A., to Atlas Copco Aktiebolag. Torque delivering tool with torque reaction support. 4,485,698, Cl. 81-57.110.

Adonyi, Ivan; Farkas, Endre; Hegedus, Gyula; Kormendy, Attila; Mogyorosi, Istvanne ; Molnar, Geza; Sass, Szilard; Scholler, Laszlo ; Takacs, Lajos; and Vitez, Gyorgy, to Telefongyar. Circuit arrangement for extended addressing of a microprocessor system. 4,486,825, Cl. 364-200.000.

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Boie, Immo; Kovacic, Guido; and Osegowitsch, Victor, 4,486,085, Cl. 354-312.000.
Ertl, Franz; Fleck, Adolf; and Jelinek, Nikolaus, 4,485,565, Cl. 34-4.000.

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Ebata, Yoshihiro; Kose, Saburo; Kinoshita, Makoto; and Ueno, Tsutomu, 4,486,257, Cl. 156-325.000.

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Bock, Georg; Schlick, Erich; and Schnall, Gunther, 4,486,012, Cl. 271-3.000.

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Wagner, Gerald; and Wauer, Dieter, 4,486,082, Cl. 354-6.000.

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Ward, Bennie R.; Agrawal, Suphal P.; and Ashton, Richard F., 4,486,244, Cl. 148-12.70A.

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Rasmussen, Robert, 4,485,653, Cl. 72-58.000.
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Bechara, Ibrahim S.; and Mascioli, Rocco L., 4,486,370, Cl. 264-53.000.
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Aisin Kako Kabushiki Kaisha: *See*—
Kurauchi, Toshio; Takahashi, Hidero; Sato, Shigeyuki; Murase, Makoto; Takahara, Minoru; Ohi, Tamio; and Kamio, Takaki, 4,486,373, Cl. 264-142.000.

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Kurauchi, Toshio; Takahashi, Hidero; Sato, Shigeyuki; Murase, Makoto; Takahara, Minoru; Ohi, Tamio; and Kamio, Takaki, 4,486,373, Cl. 264-142.000.
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Sakakibara, Naoji, 4,485,782, Cl. 123-389.000.

Aisin-Warner Kabushiki Kaisha: *See*—
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Akado, Hajime: *See*—
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Akashi, Shunji: *See*—
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Akatsuka, Takao: *See*—
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,485,772, Cl. 123-179.00B.

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Akimoto, Ryosaku: *See*—
Yoshida, Yukio; Tanaka, Akira; Fukumoto, Ryutaro; Akimoto, Ryosaku; Tanaka, Shigetoshi; and Ito, Nobuaki, 4,485,863, Cl. 165-42.000.

Akita, Sigeyuki: *See*—
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Aktiebolaget Cerbo: *See*—
Skylvik, Arnold R., 4,485,920, Cl. 206-468.000.

Aktiebolaget Edane Komponenter: *See*—
Iverlund, Bertil G.; Risman, Per Olov G.; and Uddborn, Hans G., 4,485,564, Cl. 34-1.000.

Aktien-Gesellschaft der Dillinger Huttenwerks: *See*—
Kopf, Gerhard, 4,486,009, Cl. 266-114.000.

Aktieselskabet Nordiske Kabel- og Traadfabriker: *See*—
Jorgensen, Aage B., 4,486,302, Cl. 209-399.000.

Akzona Incorporated: *See*—
Zengel, Hans; and Bergfeld, Manfred, 4,486,603, Cl. 564-461.000.

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Albert, Winfried; and Lenz, Helmut, to Boehringer Mannheim GmbH. Process for the preparation of immunologically active enzyme tagged conjugates. 4,486,534, Cl. 435-188.000.

Albrecht, Ernst; and Barth, Karl, to Pfaff Industriemaschinen GmbH. Sewing machine with a stop for the material to be sewn. 4,485,748, Cl. 112-110.000.

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Krumme, John F., 4,485,816, Cl. 128-334.00R.

Alexander, Robert J.: *See*—
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Alfa-Laval, Inc.: *See*—
Sutton, Philip J.; Lyon, Byron W.; and Werner, Gunnar A. A., 4,485,762, Cl. 119-14.170.

Algoma Steel Corporation Limited, The: *See*—
Ackert, Robert J.; Witty, Robert W.; and Crozier, Peter A., 4,486,248, Cl. 148-145.000.

Alkaloida Vegyeszeti Gyar: *See*—
Brendel nee Hajnoczki, Marta; Gulyas, Imre; Gyoker, Istvan; Zsupan, Kalman; Csorvassy, Istvan; Salamon, Zoltan; Somogyi,

Gabor; Szentkiralyi, Istvan; Timar, Tibor; Biro nee Czapary, Eva; Fodor, Istvan; and Repasi, Janos, 4,486,359, Cl. 260-502.50F.

Allegheny Ludlum Steel Corporation: *See*—
Ward, Brian L., 4,485,839, Cl. 164-463.000.

Allenbach, Udo: *See*—
Lenthe, Manfred; Allenbach, Udo; Buttner, Gerhard; and Christmann, Karl-Friedrich, 4,486,611, Cl. 568-653.000.

Allied Corporation: *See*—
Dunning, Leonard A., 4,486,172, Cl. 432-11.000.
Hildebrand, Clair E.; and Wong, Franklin S., 4,486,226, Cl. 75-11.000.

Allis-Chalmers Corp.: *See*—
Gafford, Alexander T.; and Murray, David L., 4,485,939, Cl. 222-129.000.

Almstrom, Sten-Hakan, to United Stirling AB. Solar energy conversion plant. 4,485,627, Cl. 60-641.140.

Alpha Therapeutic Corporation: *See*—
Chang, Chong E., 4,486,341, Cl. 260-112.00B.

Alps Electric Co., Ltd.: *See*—
Tanimoto, Isao; Yamada, Tsuneo; and Yamada, Katsuhisa, 4,486,510, Cl. 428-598.000.

Altshuler, John H.; and Farrish, Dean T., to Applied Medical Devices, Inc. Bone marrow transplant method and apparatus. 4,486,188, Cl. 604-4.000.

Aluminum Company of America: *See*—
Ormesher, Robert J., 4,486,228, Cl. 75-65.00R.
Troup, Robert L.; and Stevenson, David T., 4,486,229, Cl. 75-68.00R.

ALZA Corporation: *See*—
Shaw, Jane; and Gale, Robert M., 4,486,193, Cl. 604-897.000.

Amada Company, Limited: *See*—
Koyama, Katsumi; Kojima, Shigenori; Kogure, Tsuneo; Itano, Naoaki; and Ohashi, Yoshihiko, 4,486,841, Cl. 364-474.000.

Amano, Masatoshi: *See*—
Nakata, Kazuo; Ishikawa, Tsuneo; Honma, Ichiro; Koyama, Arata; Hirai, Masaharu; and Amano, Masatoshi, 4,486,467, Cl. 427-129.000.

Amatsu, Masashi: *See*—
Yanase, Takeyasu; and Amatsu, Masashi, 4,486,858, Cl. 365-39.000.

Amchem Products, Inc.: *See*—
Donofrio, John J., 4,486,241, Cl. 148-6.15Z.

Amelot, Bernard; and Ducreux, Jean, to Freyssinet International (STUP). Device for tensioning pre-stress bars and for determining this tension. 4,485,677, Cl. 73-761.000.

Amerace Corporation: *See*—
Pricone, Robert M.; and Heenan, Sidney A., 4,486,363, Cl. 264-1.400.

American Can Company: *See*—
Gold, Vance B.; and Phalin, Thomas L., 4,485,663, Cl. 72-347.000.

American Cyanamid Company: *See*—
Morris, Edward, 4,485,582, Cl. 43-131.000.
Tomcufcik, Andrew S.; and Sloboda, Adolph E., 4,486,430, Cl. 424-249.000.

American District Telegraph Company: *See*—
Guscott, John K.; and Dyer, Hugh D., 4,486,661, Cl. 250-342.000.

American Hoechst Corporation: *See*—
Caines, R. Scott, 4,486,483, Cl. 428-195.000.
Jeffers, William; Seeley, Douglas; Faust, Raimund J.; and Liu, Shuchen, 4,486,529, Cl. 430-300.000.

American Nucleonics Corp.: *See*—
Ghose, Rabindra N.; Sauter, Walter A.; and Foley, William L., 4,486,757, Cl. 343-417.000.

American Standard Inc.: *See*—
Mazur, Richard J.; and Wood, James A., 4,486,839, Cl. 364-426.000.

Amerock Corporation: *See*—
Besting, Gary M., 4,486,106, Cl. 384-248.000.

Ames, Thomas J.: *See*—
Riess, Ronald L.; and Ames, Thomas J., 4,486,002, Cl. 251-214.000.

AMP Incorporated: *See*—
Long, William B.; Shannon, Suel G.; Shuey, John R.; and Stahl, Daniel E., 4,486,064, Cl. 339-99.00R.

Amplatz, Kurt; and Kotula, Frank. Device and method for fluoroscope-monitored percutaneous puncture treatment. 4,485,815, Cl. 128-329.00R.

Anahara, Meiji; and Suzuki, Yoshihisa, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method and apparatus for drafting fiber strands. 4,485,528, Cl. 19-258.000.

Analgesic Associates: *See*—
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,486,436, Cl. 424-253.000.

Anderson, Kenneth M.; and Brumwell, Dennis A., to Medtronic, Inc. Implantable dynamic pressure transducer system. 4,485,813, Cl. 128-675.000.

Ando, Masao, to Chisso Corporation. Method of and system for inspecting performance of heat-insulating layer surrounding a pipe. 4,486,103, Cl. 374-5.000.

Andrews, Martyn P.: *See*—
Wheatley, Nigel J.; and Andrews, Martyn P., 4,486,831, Cl. 364-200.000.

Androbot Singapore Pte. Ltd.: *See*—
May, Richard L.; and Curren, Kenneth J., 4,485,555, Cl. 33-18.00R.

Angelier, Nicole; and Colomb, Francois, to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude. Device for freezing biological products. 4,485,641, Cl. 62-514.00R.

Anglaret, Gilbert; Wolff, Rene ; and Audibert, Alain, to Framatome. Device for supporting a pipe. 4,485,994, Cl. 248-65.000.

Ankeny, V. Scott, to Tafco Equipment Company. Vehicle spare tire carrier. 4,485,945, Cl. 224-42.060.

Anti-Fire-Foam, Inc.: *See*—
Gray, Stanley D., 4,486,468, Cl. 427-181.000.

Antonitsch, Walter: *See*—
Wieninger, Horst; Hollein, Gunter; Scheurecker, Werner; and Antonitsch, Walter, 4,485,837, Cl. 164-448.000.

Antonov, Lev T.: *See*—
Gorbacheva, Irina N.; Sukhova, Ljudmila M.; Kozinda, Zinaida J.; Molokov, Vladislav L.; Antonov, Lev T.; Simonov, Vadim D.; Chertov, Viktor A.; Dvoskin, Semen I.; and Veseneva, Raisa S., 4,486,347, Cl. 534-797.000.

Anzai, Toshio: *See*—
Shinohara, Takanobu; Anzai, Toshio; and Shinogaya, Tatsuji, 4,486,472, Cl. 427-239.000.

Anzinger, Rupert, to Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft. Apparatus for withdrawing a thread from a spinning station. 4,485,618, Cl. 57-352.000.

Aoki, Tetsuo, to Takeda Riken Co. Ltd. Data transfer system. 4,486,750, Cl. 340-825.000.

Aoyama, Tetsuya: *See*—
Hirai, Osamu; Aoyama, Tetsuya; and Mukoyama, Yoshiyuki, 4,486,308, Cl. 210-502.100.

Apache Powder Company: *See*—
Moore, Jack M.; and Sutch, Michael T., 4,485,741, Cl. 102-331.000.

Appleton Machine Company: *See*—
Klemmer, Paul J.; and Daul, Michael J., 4,485,734, Cl. 100-168.000.

Applied Medical Devices, Inc.: *See*—
Altshuler, John H.; and Farrish, Dean T., 4,486,188, Cl. 604-4.000.

Arahori, Haruo: *See*—
Minamiyama, Toshimasa; and Arahori, Haruo, 4,485,595, Cl. 51-165.920.

Arai, Motomi: *See*—
Sugo, Yuko; Yamamoto, Tadahiro; Arai, Motomi; and Saito, Masaaki, 4,485,791, Cl. 123-478.000.

Arai, Taiji; and Kako, Saburo, to Denryoku-Chuo-Kenkyusho; and Shigen-Kyokai. Compound solid fertilizer and manufacturing method thereof. 4,486,217, Cl. 71-25.000.

Arbab, Dildar: *See*—
Forster, Hilmar; Vahldiek, Ernst; and Arbab, Dildar, 4,485,931, Cl. 213-4.000.

Architectural Affiliates: *See*—
Rodriguez-Torres, Wilfredo, 4,485,589, Cl. 49-38.000.

Aristoff, Paul A., to Upjohn Company, The. Carbacyclin analogs. 4,486,598, Cl. 562-466.000.

Aritomi, Osamu: *See*—
Fujiwara, Kazuo; Tomari, Haruo; Aritomi, Osamu; and Sato, Nobuhiro, 4,486,231, Cl. 75-125.000.

Arizona Board of Reagents: *See*—
Pettit, George R., 4,486,414, Cl. 424-177.000.

Armco, Inc.: *See*—
Jamison, Warren E., 4,486,319, Cl. 252-12.200.

Armour Food Company: *See*—
Jedlicka, Glen J.; and Baker, Curtis L., 4,486,645, Cl. 219-121.0LN.

Armour Pharmaceutical Company: *See*—
Fisher, Joseph D., 4,486,410, Cl. 424-101.000.

Armstrong World Industries, Inc.: *See*—
Hosfeld, Lewis K.; and Lenox, Ronald S., 4,486,523, Cl. 430-106.600.

Arndt, Douglas: *See*—
Bateson, George F.; Arndt, Douglas; and Boyer, Steven R., 4,486,342, Cl. 260-112.00G.

Arnold, Robert G.: *See*—
Lutfy, Joseph P.; Grabowski, Thaddeus J.; and Arnold, Robert G., 4,486,273, Cl. 204-15.000.

Arntyr, Oscar S.; and Engstrom, Thord I. Method and device for reducing the risk of freezing of surface-water pipe-line systems. 4,486,122, Cl. 405-157.000.

Arons, Richard M.; and David, Lawrence D., to Celanese Corporation. Production of fine ferrimagnetic spinels. 4,486,401, Cl. 423-594.000.

Arseneau, Roger E., to Siemens Gammasonics, Inc. Dual integrator for a radiation detector. 4,486,663, Cl. 250-363.00S.

Arthur Edward Pty. Ltd.: *See*—
Larkin, Bryan J., 4,486,008, Cl. 256-26.000.

Asahi Glass Company Ltd.: *See*—
Miyake, Haruhisa; Suhara, Manabu; Mori, Hiroshi; and Saito, Yoshihiko, 4,486,277, Cl. 204-98.000.
Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, 4,486,278, Cl. 204-98.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Kamide, Kenji; Okajima, Kunihiko; and Matsui, Toshihiko, 4,486,119, Cl. 106-177.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Ichinokawa, Kazuhiro, 4,486,092, Cl. 355-8.000.
Itoh, Kiyoshi; Nishikawa, Yukiyasu; Hoshika, Shuji; Hara, Masato; Ishiai, Hideyuki; Okamoto, Ikuzo; and Shindow, Osamu, 4,486,080, Cl. 351-206.000.
Takada, Jun; and Takaoka, Yukio, 4,486,083, Cl. 354-203.000.

Asahi, Naotatsu; Yamaguchi, Shizuka; Kojima, Yoshitaka; and Terakado, Katsuyoshi, to Hitachi, Ltd. Method for coating by glow discharge. 4,486,462, Cl. 427-39.000.

Asahi, Taro; Higashino, Toshimitu; Ikoma, Noboru; Hanai, Masato; and Murata, Nakato, to Nippondenso Co., Ltd. Alternator with vacuum pump. 4,486,668, Cl. 290-1.00B.

Asai, Hiromitsu: *See*—
Furumura, Kyozaburo; Sugi, Hiromi; Murakami, Yasuo; and Asai, Hiromitsu, 4,486,026, Cl. 277-80.000.

Asakura, Toshiyuki; Kobayashi, Hiroaki; and Noguchi, Yukio, to Toray Industries, Inc. Stabilized polyphenylene sulfide and method for producing same. 4,486,578, Cl. 525-535.000.

ASEA Aktiebolag: *See*—
Ekbom, Ragnar; and Garvare, Tore, 4,485,961, Cl. 228-193.000.

Ashiba, Masahiro: *See*—
Kato, Tetuo; Miura, Ieaki; Ashiba, Masahiro; and Imaizumi, Tomio, 4,485,900, Cl. 188-282.000.

Ashland Oil, Inc.: *See*—
Erwin, Wayne F., 4,485,840, Cl. 137-240.000.

Ashton, Richard F.: *See*—
Ward, Bennie R.; and Ashton, Richard F., 4,486,242, Cl. 148-11.50A.
Ward, Bennie R.; Agrawal, Suphal P.; and Ashton, Richard F., 4,486,244, Cl. 148-12.70A.

Aslund, Christer, to NYBY Uddeholm AB. Tubular composite elements processes and a pressing for their production. 4,486,385, Cl. 419-48.000.

Association pour la Recherche et la Developpement des Methodes et Processus Industriels (Armines): *See*—
Lalauze, Rene ; Pijolat, Christophe; and Couput, Jean-Paul, 4,485,667, Cl. 73-23.000.

AT&T Bell Laboratories: *See*—
Abys, Joseph A.; and Trop, Harvey S., 4,486,274, Cl. 204-44.000.
Capasso, Federico, 4,486,765, Cl. 357-13.000.
Cox, Richard V.; and Crochiere, Ronald E., 4,486,900, Cl. 381-38.000.
Daudelin, Douglas S., 4,486,833, Cl. 364-200.000.
Gaunt, Wilmer B., Jr.; and Giammusso, Michael R., 4,486,876, Cl. 370-7.000.
Koeneke, Conrad J.; Lepselter, Martin P.; and Lynch, William T., 4,485,550, Cl. 29-571.000.
Levinson, Frank H., 4,486,071, Cl. 350-96.180.
Lynch, Brian; MacChesney, John B.; Partus, Fred P.; and Simpson, Jay R., 4,486,214, Cl. 65-3.120.
Seidel, Harold, 4,486,740, Cl. 340-347.0DD.
Turner, Jonathan S., 4,486,877, Cl. 370-15.000.
White, Jonathan C., 4,486,884, Cl. 372-3.000.

AT&T Technologies, Inc.: *See*—
Harmel, Norman A., 4,486,861, Cl. 367-2.000.
Kohler, Joylee E., 4,486,626, Cl. 179-18.0DA.
Lynch, Brian; MacChesney, John B.; Partus, Fred P.; and Simpson, Jay R., 4,486,214, Cl. 65-3.120.

Atco Rubber Products, Inc.: *See*—
Schaefer, Claude W., 4,486,260, Cl. 156-429.000.

Atlantic Richfield Company: *See*—
Baillie, Lloyd A., 4,486,207, Cl. 55-455.000.
Bays, Marvin G., 4,485,889, Cl. 181-121.000.
Gaul, James M.; and Nguyen, Tinh, 4,486,557, Cl. 523-446.000.
Lordi, Frank E.; and Triplett, Jacob, 4,486,570, Cl. 525-93.000.
Meyers, Kevin O., 4,485,874, Cl. 166-279.000.

Atlas Copco Aktiebolag: *See*—
Adman, Nils G.; and Jacobsson, Rolf A., 4,485,698, Cl. 81-57.110.

Atsumi, Kinya; and Ito, Novuei, to Nippon Soken, Inc. Ceramic heater. 4,486,651, Cl. 219-553.000.

Aubert, Andre ; Chevallier, Jacques; Gaucher, Antoine; and Terrat, Jean-Paul, to Centre Stephanois De Recherches Mecanmiques Hydromecanique et Frottement. Chromium coating with high hardness capable of resisting wear, strain surface fatigue and corrosion all at the same time. 4,486,285, Cl. 204-192.00C.

Audibert, Alain: *See*—
Anglaret, Gilbert; Wolff, Rene ; and Audibert, Alain, 4,485,994, Cl. 248-65.000.

Augat Inc.: *See*—
Roberts, Harold A., 4,486,072, Cl. 350-96.210.

Augurt, Thomas A., to Propper Manufacturing Co., Inc. Disposable prevacuum steam sterilizer test device. 4,486,387, Cl. 422-58.000.

Ault, Russell L.: *See*—
Legg, Wesley E.; Ault, Russell L.; Mott, Richard A.; and Leewood, Alan R., 4,485,590, Cl. 49-501.000.

Ausonia Farmaceutici s.r.l.: *See*—
De Vincentiis, Leonardo, 4,486,437, Cl. 424-256.000.

Austin, Richard G.: *See*—
Michaelson, Robert C.; Austin, Richard G.; and White, Donald A., 4,486,613, Cl. 568-860.000.

Australian Paper Manufacturers Limited: *See*—
Nguyen, Kien L.; Keogh, Andrew J.; and Covey, Geoffrey H., 4,486,394, Cl. 423-155.000.

Automotive Products plc: *See*—
Burke, John P.; and Young, Alastair J., 4,485,687, Cl. 74-358.000.

Avilla, Kenneth J., to Standard Structures, Inc. Forming a cylindrically shaped hole in a laminated wooden beam. 4,485,860, Cl. 144-350.000.

Ayasli, Yalcin, to Raytheon Company. Distributed amplifier. 4,486,719, Cl. 330-286.000.

B. F. Goodrich Company, The: *See*—
George, Paul J., 4,486,489, Cl. 428-220.000.

B-Line Systems, Inc.: *See*—
Kowalski, Joseph W.; and Cunneen, Charles N., 4,485,998, Cl. 248-561.000.

Baade, Otto: *See*—
Klein, Dean A.; Davis, Steven C.; Wroblewski, Jerome J.; Baade, Otto; and Hinrichs, Earl L., 4,486,840, Cl. 364-474.000.

Baba, Yasushi; Tezuka, Hirofumi; and Kitagawa, Kohzo, to Kyoto Ceramic Company Limited. Lighting equipment with a solar cell. 4,486,820, Cl. 362-183.000.

Babcock, Horace W. Solar heater for swimming pools. 4,485,802, Cl. 126-416.000.

Babcock & Wilcox Company, The: *See*—
Wiener, Murray, 4,485,803, Cl. 126-422.000.

Bachelard, Roland: *See*—
Gurtner, Bernard; Barral, Robert; and Bachelard, Roland, 4,486,402, Cl. 423-626.000.

Bagnell, Walter C.: *See*—
Albert, Kenneth J., 4,486,675, Cl. 310-46.000.

Bahr, Thomas: *See*—
Komossa, Werner; Barck, Hans-Adolf; and Bahr, Thomas, 4,485,827, Cl. 131-84.00C.

Bai, Dov; Brandt, Achi E.; and Sollish, Bruce D., to Yeda Research and Development Co. Ltd. Apparatus and techniques for electric tomography. 4,486,835, Cl. 364-414.000.

Bailey, Bert E.: *See*—
Thompson, Wayne L.; and Bailey, Bert E., 4,486,121, Cl. 405-17.000.

Baillie, Lloyd A., to Atlantic Richfield Company. Apparatus for reducing attrition of particulate matter in a chemical conversion process. 4,486,207, Cl. 55-455.000.

Bakel, Izhak, to Geshuri Laboratories, Ltd. Process for producing N-phosphonomethylglycine derivatives. 4,486,356, Cl. 260-501.120.

Baker, Curtis L.: *See*—
Jedlicka, Glen J.; and Baker, Curtis L., 4,486,645, Cl. 219-121.0LN.

Baker, Irwin G.; Fuller, Robert L., Jr.; and Proff, Dwayne E., to Boeing Company, The. Structural component drilling machine having programmable drilling location indexing. 4,486,128, Cl. 408-3.000.

Baker, Josefina T.; Lawrence, Paul J.; and Townsley, Charles W., to Smithkline Diagnostics, Inc. Specimen slide for occult blood testing. 4,486,536, Cl. 436-66.000.

Baker Oil Tools, Inc.: *See*—
Speller, David J., 4,485,876, Cl. 166-373.000.

Baksa, Gyorgy; Boros, Jozsef; Horvath, Gyula; Ihasz, Balazs; Pais, Zoltan; Rainiss, Matyas; Sitkei, Ferenc; Solymar, Karoly; Toth, Bela; Vallo, Ferenc; Voro s, Istvan; Orban nee Kelemen, Maria; and Zoldi, Jozsef, to Magyar Aluminiumipari Troszt. Process for the reduction of the sodium hydroxide losses of the Bayer-type alumina production. 4,486,393, Cl. 423-121.000.

Balducci, Luigi: *See*—
Paffoni, Camillo; Balducci, Luigi; Bottaccio, Giorgio; and Pieroni, Marcello, 4,486,237, Cl. 106-308.00Q.

Baldwin, John J.; and McClure, David E., to Merck & Co., Inc. Aralkylaminoethanol heterocyclic compounds. 4,486,446, Cl. 424-283.000.

Balint, Geza: *See*—
Domjan, Laszlo ; Balint, Geza; and Bozsoky, Sandor, 4,485,825, Cl. 128-774.000.

Ball, David M.; Sumsion, Alton E.; and Taylor, Zane S., to United States Steel Corporation. Method for suppressing fume from a metal pouring operation. 4,486,230, Cl. 75-96.000.

Ball, James H.; Houts, Ronald C.; and Schaetzel, Phillip R., to Minnesota Mining and Manufacturing Company. Aerial communications cable splice closure and end cap useful therewith. 4,486,620, Cl. 174-41.000.

Ballato, Arthur: *See*—
Nakazawa, Mitsuo; Ballato, Arthur; and Lukaszek, Theodore J., 4,486,682, Cl. 310-361.000.

Baltz, Gene F., to Outboard Marine Corporation. Engine overheat warning system. 4,485,767, Cl. 123-41.150.

Baltz, Rainier, to La Telephonie Industrielle et Commerciale Telic Alcatel. Method and apparatus for mixing low-frequency signals transmitted via different time slots towards the same telephone receiver set. 4,486,879, Cl. 370-62.000.

Baltz, Richard H.; Wild, Gene M.; and Seno, Eugene T., to Eli Lilly and Company. Demethylmacrocin compounds and derivatives thereof. 4,486,584, Cl. 536-7.100.

Balzer, Dieter; and Koswig, Kurt, to Chemische Werke Huels, A.G. Process for oil recovery from a subterranean reservoir. 4,485,873, Cl. 166-274.000.

Balzers Aktiengesellschaft: *See*—
Winkler, Otto, 4,485,631, Cl. 62-55.500.

Bando, Kazuo. Method and apparatus of cleaning the faces of plastic forming metal molds. 4,486,238, Cl. 134-6.000.

Bando Kiko Co., Ltd.: *See*—
Bando, Shigeru, 4,485,728, Cl. 92-178.000.

Bando, Shigeru, to Bando Kiko Co., Ltd. Reciprocating machine. 4,485,728, Cl. 92-178.000.

Bando, Shiyouichi: *See*—
Matsumoto, Hideyuki; and Bando, Shiyouichi, 4,486,297, Cl. 208-211.000.

Bandoh, Tadaaki: *See*—
Kobayashi, Yoshiki; Maejima, Hideo; Bandoh, Tadaaki; and Nakanishi, Hiroaki, 4,486,834, Cl. 364-200.000.

Barber-Colman Company: *See*—
Simpson, Willie T., 4,485,987, Cl. 242-130.100.

Barck, Hans-Adolf: *See*—
Komossa, Werner; Barck, Hans-Adolf; and Bahr, Thomas, 4,485,827, Cl. 131-84.00C.

Barker, Alan R.: *See*—
Hoemann, Keith I.; and Barker, Alan R., 4,486,699, Cl. 318-772.000.

Barlow, Gordon A.; and Krutsch, John R., to Gordon Barlow Design. Reversing mechanism for a toy motor driven wheeled vehicle. 4,485,587, Cl. 446-442.000.

Barnes, Richard W. Engine protection device. 4,485,781, Cl. 123-342.000.

Barr & Stroud Limited: *See—*
Neil, Iain A.; Lidwell, Michael O.; and McCreath, William, 4,486,069, Cl. 350-1.200.

Barral, Robert: *See—*
Gurtner, Bernard; Barral, Robert; and Bachelard, Roland, 4,486,402, Cl. 423-626.000.

Barrett, Richard L., to Machlett Laboratories, Incorporated, The. X-Ray tube voltage indicator. 4,486,895, Cl. 378-98.000.

Barth, Karl: *See—*
Albrecht, Ernst; and Barth, Karl, 4,485,748, Cl. 112-110.000.

Bartl, Knut: *See—*
Ziegenhorn, Joachim; Bartl, Knut; and Brandhuber, Max, 4,486,531, Cl. 435-19.000.

Barzaghi, Fernando: *See—*
Bianchi, Mario; and Barzaghi, Fernando, 4,486,429, Cl. 424-248.500.

BASF Aktiengesellschaft: *See—*
Becker, Ernst; Bergmann, Udo; Degen, Helmut; Hansen, Guenter; and Krallmann, Reinhold, 4,486,198, Cl. 8-639.000.
Hoelderich, Wolfgang; Mross, Wolf D.; and Schwarzmann, Matthias, 4,486,617, Cl. 585-640.000.
Seybold, Guenther; and Wuerzer, Bruno, 4,486,221, Cl. 71-90.000.
Seybold, Guenther, 4,486,587, Cl. 544-99.000.
Thiele, Heino; Weber, Werner; Zettler, Hans D.; Schlueter, Klaus; Wallner, Josef; and Seid, Bernhard, 4,486,102, Cl. 366-182.000.

BASF Wyandotte Corporation: *See—*
Schmidt, Douglass N.; Finnan, Jeffrey L.; and Lisa, Rudolph E., 4,486,435, Cl. 424-252.000.

Basley, Richard J.: *See—*
Osborn, Donald H.; and Basley, Richard J., 4,486,225, Cl. 75-0.50R.

Batchelder, David N.: *See—*
Pitt, Gillies D.; Williamson, Roger J.; Batchelder, David N.; and Prabakaran, Arulanandam M., 4,485,679, Cl. 73-861.220.

Bateson, George F.; Arndt, Douglas; and Boyer, Steven R., to Henkel Corporation. Recovery of protein using shear. 4,486,342, Cl. 260-112.00G.

Battah, Husam, to Michigan Consolidated Gas Company. Method of controlling a motive power and fluid driving system. 4,486,148, Cl. 417-2.000.

Battelle Memorial Institute: *See—*
De Pous, Olivier; Richon, Dominique; and Novotny, Hans, 4,486,544, Cl. 501-96.000.

Baty, Kurt F.: *See—*
Wolff, Kenneth T.; Samson, Joseph E.; and Baty, Kurt F., 4,486,826, Cl. 364-200.000.

Bauer, Wolfgang; Kuhlein, Klaus; and Nagl, Gert, to Cassella Aktiengesellschaft. Process for the preparation of sulphur dyestuffs of the phthalocyanine series. 4,486,350, Cl. 260-245.860.

Baum, Albert S.: *See—*
Pilie, Roland J.; Baum, Albert S.; and Russo, Anthony L., 4,485,534, Cl. 24-384.000.

Baus, Heinz G. Ventilation unit. 4,485,730, Cl. 98-118.000.

Baxter, Martin G.; Elphick, Albert R.; Miller, Alistair A.; and Sawyer, David A. Substituted aromatic compounds. 4,486,354, Cl. 260-465.00E.

Bayer Aktiengesellschaft: *See—*
Krist, Otto; and Salzburg, Herbert, 4,486,542, Cl. 501-17.000.
Kunde, Klaus, 4,486,348, Cl. 534-741.000.
Lenthe, Manfred; Allenbach, Udo; Buttner, Gerhard; and Christmann, Karl-Friedrich, 4,486,611, Cl. 568-653.000.
Mirza, Jean, 4,486,477, Cl. 427-388.100.
Rauleder, Gebhard; and Waldmann, Helmut, 4,486,606, Cl. 568-385.000.
Reiser, Wolf; Draber, Wilfried; Buchel, Karl H.; Lursen, Klaus; Frohberger, Paul-Ernst; and Paul, Volker, 4,486,218, Cl. 71-76.000.

Bays, Marvin G., to Atlantic Richfield Company. Valve means for compressed air powered acoustic pulse generator. 4,485,889, Cl. 181-121.000.

BBC Brown, Boveri & Company, Limited: *See—*
Niemeyer, Lutz; Perrenoud, Blaise; Ragaller, Klaus; Schade, Ekkehard; and Schaumann, Rolf, 4,486,632, Cl. 200-148.00A.

Beard, Robert, to Oximetrix, Inc. Surgical cutting blade. 4,485,810, Cl. 128-303.100.

Beatrice Foods Co.: *See—*
Parrotta, Michael A., 4,486,033, Cl. 283-94.000.

Bechara, Ibrahim S.; and Mascioli, Rocco L., to Air Products and Chemicals, Inc. Paint adhesion for rim parts. 4,486,370, Cl. 264-53.000.

Becht, Charles, IV: *See—*
Worley, Arthur C.; and Becht, Charles, IV, 4,485,766, Cl. 122-510.000.

Becker, Ernst; Bergmann, Udo; Degen, Helmut; Hansen, Guenter; and Krallmann, Reinhold, to BASF Aktiengesellschaft. Navy dye mixtures. 4,486,198, Cl. 8-639.000.

Becker, Harry R., to Joy Manufacturing Company. Mining Machine. 4,486,051, Cl. 299-78.000.

Beeman, Robert H.; and Chmura, Stanley J., to GTE Automatic Electric Inc. Cable load status detector. 4,486,627, Cl. 179-175.30R.

Beggs, William C. Sequential capacitive discharge circuit for flash lamps. 4,486,691, Cl. 315-241.00P.

Begley, Maxwell G.; and Munslow-Davies, Keith, to Kelvin E. Lord & Co. Conduit case (case 2). 4,485,530, Cl. 24-270.000.

Behnk, Gunter; Kohn, Herbert; and Pinkerneil, Gunther, to Nordischer Maschinenbau Rud. Baader GmbH & CO KG. Device for aligning fish with regard to the position of their plane of symmetry. 4,485,525, Cl. 17-55.000.

Beiersdorf Aktiengesellschaft: *See—*
Pietsch, Hanns; and Hohmann, Volker, 4,486,488, Cl. 428-219.000.

Belani, Jagdish G.: *See—*
Chen, Yung-Shih; Belani, Jagdish G.; and Sajja, Vijay, 4,486,511, Cl. 428-620.000.

Bell, Frank H., to Thiokol Corporation. Contact fuze for mine munitions. 4,486,251, Cl. 149-2.000.

Bell & Howell Company: *See—*
Vander Syde, Gary L., 4,486,013, Cl. 271-107.000.

Bellitto, Gianfranco: *See—*
Fabbri, Cesare; Bellitto, Gianfranco; La Mantia, Giuseppe; and Failla, Biagio, 4,486,209, Cl. 62-18.000.

Bellus, Daniel: *See—*
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,486,596, Cl. 549-239.000.

Beloit Corporation: *See—*
Ely, Donald A., 4,485,567, Cl. 34-115.000.

Belorussky Tekhnologichesky Institut: *See—*
Shutov, Gennady M.; Erdman, Maya E.; Boltovsky, Valery S.; Solomakha, Adel I.; Nosevich, Alexandr F.; Pukhalsky, Miroslav E.; Kirichenko, Vladimir A.; and Derbyshkin, Valentin V., 4,486,475, Cl. 427-351.000.

Ben Clements & Sons, Inc.: *See—*
Furutsu, Akira, 4,485,954, Cl. 227-67.000.

Bendall, Max R. Depth and refocusing pulses for use with inhomogeneous radiofrequency coils in nuclear magnetic resonance spectroscopy. 4,486,709, Cl. 324-314.000.

Bender, Ulrich, to Emil Bender, Firma. Wet-cell storage battery. 4,486,517, Cl. 429-149.000.

Bendix Corporation, The: *See—*
Henrich, Robert S., 4,486,703, Cl. 323-222.000.
Walter, Richard P.; and Taplin, Lael B., 4,485,789, Cl. 123-467.000.

Benjamin, Kelly L., to Dow Corning Corporation. Primer compositions for improving adhesion of abrasion resistant silicone coatings to plastic surfaces. 4,486,565, Cl. 524-506.000.

Bennetot, Remy J. P., to Societe Industrielle de Decoration et Application S.I.D.A. Three-section hoop embroidery frame. 4,485,574, Cl. 38-102.200.

Benting, Gary M., to Amerock Corporation. Rotary shelf assembly. 4,486,106, Cl. 384-248.000.

Bentley, Philip D.; and Punja, Nazim, to Imperial Chemical Industries PLC. Halogenated benzyl alcohols and halides. 4,486,355, Cl. 260-465.00G.

Benton, Stephen A., to Polaroid Corporation. Mirror-absorber for use in the illumination of transmission holograms. 4,486,070, Cl. 350-3.850.

Bergamaschi, Athos, to Elberel Italiana di Bergamaschi Athos. Double blade razor head with three elements molded in continuous manner. 4,485,554, Cl. 30-50.000.

Berger, Johannes; Blechschmidt, Wolfgang; and Wolff, Christian, to Veb Kombinat Textima. Hot air recovery system for a laundry mangle. 4,485,571, Cl. 38-14.000.

Bergfeld, Manfred: *See—*
Zengel, Hans; and Bergfeld, Manfred, 4,486,603, Cl. 564-461.000.

Berghahn, Walter G., to Bristol-Myers Company. Child resistant tablet package. 4,485,915, Cl. 206-1.500.

Bergmann, Roland: *See—*
Diehl, Manifred; Bergmann, Roland; and Stadtmuller, Gunter, 4,486,331, Cl. 252-174.250.

Bergmann, Udo: *See—*
Becker, Ernst; Bergmann, Udo; Degen, Helmut; Hansen, Guenter; and Krallmann, Reinhold, 4,486,198, Cl. 8-639.000.

Berkey, George E., to Corning Glass Works. Devitrification resistant flame hydrolysis process. 4,486,212, Cl. 65-2.000.

Bernard, David A.; Bernard, Richard A.; and Christian, William C., to Darex Corporation. Twist drill point splitting/web thinning apparatus. 4,485,596, Cl. 51-219.00R.

Bernard, Richard A.: *See—*
Bernard, David A.; Bernard, Richard A.; and Christian, William C., 4,485,596, Cl. 51-219.00R.

Berning, Cletus F.: *See—*
Cartmell, Robert L.; and Berning, Cletus F., 4,485,966, Cl. 236-46.00R.

Bernstein, Joel E., to Dermalogical Enterprises, Ltd. Method of treating psoriatic skin and composition. 4,486,450, Cl. 424-324.000.

Berrill, William H.: *See—*
Flanders, James R.; Newton, Robert A.; and Berrill, William H., 4,485,512, Cl. 12-12.500.

Berry, Ira R.: *See—*
Shah, Dilip; Borkan, Lionel; and Berry, Ira R., 4,486,412, Cl. 424-156.000.

Berstein, Garri; and Hansen, Willy, to Wilhelm Hegenscheidt GmbH. Machine for the machining of crankshafts. 4,485,537, Cl. 29-6.000.

Berthiaume, Camille J., to Columbia Chase Corporation. Boiler nozzle. 4,485,968, Cl. 239-8.000.

Berzbach, Dietmar, to Erwin Kampf GmbH & Co. Maschinenfabrik. Winding machine. 4,485,983, Cl. 242-65.000.

Betts, Paul J., Sr. Laboratory drying rack system. 4,485,929, Cl. 211-74.000.

Beu-Tex Corporation: *See—*
Kennedy, William J.; and Beucus, A. John, 4,485,644, Cl. 68-5.00D.

Beucus, A. John: *See—*
Kennedy, William J.; and Beucus, A. John, 4,485,644, Cl. 68-5.00D.

Beukema, Duane M.; and Knoblauch, Jack R., to Steelcase Inc. Height adjustor for furniture. 4,485,996, Cl. 248-407.000.

BFG Glassgroup: *See*—
Derner, Paul; and Mertin, Dietrich, 4,485,603, Cl. 52-398.000.

Bianchi, Mario; and Barzaghi, Fernando, to Roussel Uclaf. Amino derivatives of 4-phenyl 4-oxobuten-2-oic acid, pharmaceutical compositions containing them, and methods for preparing and therapeutically using them. 4,486,429, Cl. 424-248.500.

Bieber, Theo: *See*—
Schmitt, Gunther; Oppl, Gunther; Patel, Kirit; and Bieber, Theo, 4,485,617, Cl. 57-340.000.

Bieganski, Zdzislaw. Apparatus for wire stripping. 4,485,696, Cl. 81-9.50A.

Bier, Milan, to University Patents, Inc. Precipitation of proteins from salt-containing proteinaceous fluids employing a desalting treatment, and use thereof in selective plasmapheresis. 4,486,282, Cl. 204-180.00P.

Bigelow, James H.: *See*—
Hastings, Jerome K.; and Bigelow, James H., 4,486,728, Cl. 335-256.000.

Bilton, David A.: *See*—
Bridgstock, Eric; Kenworthy, David M. A.; Glaves, Brian; and Bilton, David A., 4,486,650, Cl. 219-544.000.

Binderman, Itzhak: *See*—
Mechanic, Gerald; and Binderman, Itzhak, 4,486,403, Cl. 424-54.000.

Binz GmbH U Co: *See*—
Lehmann, J. C. L., 4,485,504, Cl. 5-82.00R.

Biro nee Czapary, Eva: *See*—
Brendel nee Hajnoczki, Marta; Gulyas, Imre; Gyoker, Istvan; Zsupan, Kalman; Csorvassy, Istvan; Salamon, Zoltan; Somogyi, Gabor; Szentkiralyi, Istvan; Timar, Tibor; Biro nee Czapary, Eva; Fodor, Istvan; and Repasi, Janos, 4,486,359, Cl. 260-502.50F.

Bitrolf, Ehrenfried: *See*—
Bonnet, Ludwig; and Bitrolf, Ehrenfried, 4,486,680, Cl. 310-323.000.

Blackburn, Gary F., to Critikon, Inc. Support and anchoring mechanism for membranes in selectively responsive field effect devices. 4,486,292, Cl. 204-416.000.

Blaine, Anthony F., to Prutec Limited. Method and jig for furniture construction. 4,485,539, Cl. 29-91.100.

Blakley, Larry W.: *See*—
Whitney, Michael L.; Blakley, William G.; and Blakley, Larry W., 4,486,046, Cl. 296-1.00S.

Blakley, William G.: *See*—
Whitney, Michael L.; Blakley, William G.; and Blakley, Larry W., 4,486,046, Cl. 296-1.00S.

Blanc, Guy-Francois; and Spaeth, Hans, to Maag Gear-Wheel & Machine Company Limited. Profile measurement control for a gear measuring machine. 4,486,695, Cl. 318-663.000.

Blau, Herbert, to Blau & Lapides, Inc. Flexible traffic standard. 4,486,117, Cl. 404-10.000.

Blau & Lapides, Inc.: *See*—
Blau, Herbert, 4,486,117, Cl. 404-10.000.

Blechschmidt, Wolfgang: *See*—
Berger, Johannes; Blechschmidt, Wolfgang; and Wolff, Christian, 4,485,571, Cl. 38-14.000.

Blendax-Werke R. Schneider GmbH & Co.: *See*—
Weinert, Wolfgang, 4,486,404, Cl. 424-54.000.

Block, Jacob: *See*—
Green, Peter C.; and Block, Jacob, 4,486,318, Cl. 252-8.50A.

Blohm & Voss AG: *See*—
Koch, Ulrich; Plotz, Peter; Konig, Dieter; Langer, Jochen; Switaiski, Burkhardt; Schindler, H. Heinrich; and Wesselski, Willi, 4,486,123, Cl. 405-169.000.

Blum, Ronald D. Reusable tying device. 4,485,529, Cl. 24-117.000.

Blumner, Christoph, to Siemens Aktiengesellschaft. Method for operating a frequency converter with intermediate DC link for supplying a rotating-field machine. 4,486,698, Cl. 318-721.000.

Bock, Georg; Schlick, Erich; and Schnall, Gunther, to Agfa-Gevaert AG. Transporting arrangement for sheet like data carriers. 4,486,012, Cl. 271-3.000.

Boehringer Mannheim GmbH: *See*—
Albert, Winfried; and Lenz, Helmut, 4,486,534, Cl. 435-188.000.
Friebe, Walter-Gunar; Kampe, Wolfgang; Roesch nee Apostolides, Androniki; and Schaumann, Wolfgang, 4,486,442, Cl. 424-267.000.
Ziegenhorn, Joachim; Bartl, Knut; and Brandhuber, Max, 4,486,531, Cl. 435-19.000.

Boeing Company, The: *See*—
Baker, Irwin G.; Fuller, Robert L., Jr.; and Proff, Dwayne E., 4,486,128, Cl. 408-3.000.
Huber, Doyle W.; Smith, Richard H.; and Strong, Robert L., 4,485,709, Cl. 83-324.000.

Bogoch, Samuel. Detection of malignant tumor cells. 4,486,538, Cl. 436-503.000.

Bohen, Joseph M.: *See*—
Sandler, Stanley R.; and Bohen, Joseph M., 4,486,551, Cl. 521-171.000.

Boie, Immo; Kovacic, Guido; and Osegowitsch, Victor, to Afga-Gevaert Aktiengesellschaft. Apparatus for developing color-photographic images in etching alkaline solutions according to the color diffusion process. 4,486,085, Cl. 354-312.000.

Bolin, Robert L. Blade grinding machine for reel type mowers. 4,485,591, Cl. 51-48.0HE.

Bolliger, Martin: *See*—
Huber, Ernst; Rieger, Wolfhart; and Bolliger, Martin, 4,485,835, Cl. 164-430.000.

Boltovsky, Valery S.: *See*—
Shutov, Gennady M.; Erdman, Maya E.; Boltovsky, Valery S.; Solomakha, Adel I.; Nosevich, Alexandr F.; Pukhalsky, Miroslav E.; Kirichenko, Vladimir A.; and Derbyshkin, Valentin V., 4,486,475, Cl. 427-351.000.

Bon Mardion, Gilbert; Claudet, Gerard; and Locatelli, Marcel, to Commissariat a l'Energie Atomique. Device for automatically regulating the superfluid helium level in a tank. 4,485,640, Cl. 62-514.00R.

Bond, Irvin D. Straight line link mechanism. 4,485,685, Cl. 74-103.000.

Bone , Istvan: *See*—
Szego , Andras; Kovats, Ferenc; Peterdi, Viktoria; Bone , Istvan; Gombos, Laszlo ; Oz, Ferenc; and Simon, Imre, 4,486,595, Cl. 548-306.000.

Bonhomme, Nicolas M.: *See*—
Esayan, Mariana; Celerier, Gerard; and Bonhomme, Nicolas M., 4,486,383, Cl. 376-299.000.

Bonnet, Ludwig; and Bitrolf, Ehrenfried, to Richard Wolf GmbH. Ultrasonic piezoelectric disintegrater. 4,486,680, Cl. 310-323.000.

Borg-Warner Corporation: *See*—
Gatewood, Sidney U., 4,485,908, Cl. 192-106.200.
Gatewood, Sidney U., 4,485,909, Cl. 192-106.200.

Borkan, Lionel: *See*—
Shah, Dilip; Borkan, Lionel; and Berry, Ira R., 4,486,412, Cl. 424-156.000.

Boros, Jozsef: *See*—
Baksa, Gyorgy; Boros, Jozsef; Horvath, Gyula; Ihasz, Balazs; Pais, Zoltan; Rainis, Matyas; Sitkei, Ferenc; Solymar, Karoly; Toth, Bela; Vallo, Ferenc; Voro s, Istvan; Orban nee Kelemen, Maria; and Zoldi, Jozsef, 4,486,393, Cl. 423-121.000.

Borzoni, John M.: *See*—
Olson, Harry; and Borzoni, John M., 4,486,736, Cl. 337-409.000.

Boss, Harold O., to Ford Aerospace & Communications Corporation. Coupling assembly for joining tubular sections. 4,485,740, Cl. 102-293.000.

Bosshard, Andreas: *See*—
Schafer, Robert H.; and Bosshard, Andreas, 4,486,726, Cl. 333-260.000.

Bottaccio, Giorgio: *See*—
Paffoni, Camillo; Balducci, Luigi; Bottaccio, Giorgio; and Pieroni, Marcello, 4,486,237, Cl. 106-308.00Q.

Bowen, Robert F.; and Martel, Thomas J., to Raytheon Company. Cooker/baker utensil for microwave oven. 4,486,640, Cl. 219-10.55E.

Bowes, Emmerson; Brandes, Susan D.; Farcasiu, Malvina; and Scott, Eric J. Y., to Mobil Oil Corporation. Adsorptive demetalation of heavy petroleum residua. 4,486,298, Cl. 208-253.000.

Bowler, Raymond M., to Bush Universal, Inc. Heel attaching machine. 4,485,951, Cl. 227-7.000.

Bowman, Sheryl A.; Falender, James R.; Lipowitz, Jonathan; and Saam, John C., to Dow Corning Corporation. Method of polymerizing hydroxyl endblocked polydiorganosiloxane using quaternary ammonium carboxylate-carboxylic acid catalyst. 4,486,567, Cl. 524-863.000.

Boyd, Michael D. Radiant energy reflecting structures. 4,486,073, Cl. 350-103.000.

Boyer, James A., to General Motors Corporation. Ignition distributor voltage generator. 4,485,796, Cl. 123-617.000.

Boyer, Steven R.: *See*—
Bateson, George F.; Arndt, Douglas; and Boyer, Steven R., 4,486,342, Cl. 260-112.00G.

Bozsoky, Sandor: *See*—
Domjan, Laszlo ; Balint, Geza; and Bozsoky, Sandor, 4,485,825, Cl. 128-774.000.

Bozzelli, John W.: *See*—
Donate, Felipe A.; Bozzelli, John W.; and Dennis, Kent S., 4,486,614, Cl. 585-10.000.

Bracken, William J.; and Sakioka, Johnny K., Jr., to Ford Motor Company. Brake pad for reducing brake noise. 4,485,898, Cl. 188-250.00B.

Bracker, Gerd-Peter; and Riemann, Hanns-Helmut, to Mannesmann Veba Umwelttechnik GmbH. Method for thermal processing of solid waste and the apparatus for carrying out the method. 4,485,745, Cl. 110-229.000.

Bradbrook, John D.: *See*—
Pettigrew, Robert M.; Bradbrook, John D.; and Wainwright, Ronald C., 4,486,870, Cl. 369-32.000.

Bradford, Marion M.; Orthoefer, Frank T.; and Wright, Kenneth N., to A. E. Staley Manufacturing Company. Non-gelling corn steep liquor. 4,486,458, Cl. 426-618.000.

Brady, Kenneth T., to Imperial Clevite Inc. Quick disconnect coupling. 4,485,845, Cl. 137-614.040.

Brandenstein, Manfred; and Meyer, Wilhelm, to SKF Kugellagerfabriken GmbH. Support roll and method for installing the same in a frame member or the like. 4,486,056, Cl. 384-477.000.

Brandes, Susan D.: *See*—
Bowes, Emmerson; Brandes, Susan D.; Farcasiu, Malvina; and Scott, Eric J. Y., 4,486,298, Cl. 208-253.000.

Brandhuber, Max: *See*—
Ziegenhorn, Joachim; Bartl, Knut; and Brandhuber, Max, 4,486,531, Cl. 435-19.000.

Brandolf, Henry E., to Multi-Arc Vacuum Systems Inc. Planetary substrate support apparatus for vapor vacuum deposition coating. 4,485,759, Cl. 118-503.000.

Brandt, Achi E.: *See*—
Bai, Dov; Brandt, Achi E.; and Sollish, Bruce D., 4,486,835, Cl. 364-414.000.

Braz, Gurdarshan S. Apparatus for blending particulate materials. 4,486,101, Cl. 366-101.000.

Brauer, Eric A.: *See*—
Hackett, Charles F.; Brauer, Eric A.; Kelleher, Kevin C.; and Wright, Richard R., 4,486,872, Cl. 369-71.000.

Brauer, Gerhard M.; and Stansbury, Jeffrey W., to United States of America, Health and Human Services. Biocompatible cementitious dental compositions. 4,486,179, Cl. 433-199.000.

Bredenkamp, Gordon L., to Crucible Society Anonyme. Energy storage. 4,486,038, Cl. 290-1.00R.

Brekhov, Evgeny I.: *See*—
Chernousov, Alexandr F.; Donsrachev, Sergei A.; Ivanov, Alexei I.; Malyshev, Boris N.; Saljuk, Viktor A.; Skobelkin, Oleg K.; and Brekhov, Evgeny I., 4,485,811, Cl. 128-303.100.

Brekke, Ellen: *See*—
Kjohl, Olav; Brekke, Ellen; and Egner, Arne O., 4,486,396, Cl. 423-265.000.

Bresdel nee Hajnoczki, Marta; Gulyas, Imre; Gyoker, Istvan; Zsupan, Kalman; Csorvassy, Istvan; Salamon, Zoltan; Somogyi, Gabor; Szentkiralyi, Istvan; Timar, Tibor; Biro nee Czapary, Eva; Fodor, Istvan; and Repasi, Janos, to Alkaloida Vegyeszeti Gyar. Process for the preparation of N-phosphonomethyl-glycine. 4,486,359, Cl. 260-502.50F.

Brent Chemicals International: *See*—
Stewart, Donald G., 4,485,761, Cl. 118-702.000.

Bretl, Wayne E.; and Mycynek, Victor G., to Zenith Electronics Corporation. Frequency stabilization of a VCO FM modulator. 4,486,782, Cl. 358-197.000.

Brewer, John H.; and Foster, Terry L., to Science Research Center, Inc. Identification of reagins in the blood serum of allergen sensitized vertebrates. 4,486,540, Cl. 436-513.000.

Bridges, Jack E.: *See*—
Sresty, Guggilam C.; Dev, Harsh; Snow, Richard H.; and Bridges, Jack E., 4,485,868, Cl. 166-248.000.
Sresty, Guggilam C.; Snow, Richard H.; and Bridges, Jack E., 4,485,869, Cl. 166-248.000.

Bridgstock, Eric; Kenworthy, David M. A.; Glaves, Brian; and Bilton, David A., to Fusion Plastics Ltd.; and Vectstar Limited. Electrofusion fitting and control apparatus therefor. 4,486,650, Cl. 219-544.000.

Brinkhof, Joseph B.; and Chang, Yih-Yi, to Budd Canada Inc. Engine block heater having flexible clamping member. 4,485,771, Cl. 123-142.50E.

Bristol-Myers Company: *See*—
Berghahn, Walter G., 4,485,915, Cl. 206-1.500.
Narita, Yukio; Iimura, Seiji; Aburaki, Shimpei; Okumura, Jun; and Naito, Takayuki, 4,486,586, Cl. 544-022.000.

British Aerospace Public Limited Company: *See*—
Campion, Brian S., 4,486,146, Cl. 416-129.000.

British-American Tobacco Company Limited: *See*—
Krywiczanin, Wladyslaw H.; and Lumsden, William, 4,485,981, Cl. 242-57.000.

British Petroleum Company Limited, The: *See*—
McMurray, Robert; and Pratley, Gerald, 4,486,167, Cl. 431-114.000.

British Petroleum Company p.l.c., The: *See*—
Pratley, Gerald, 4,486,168, Cl. 431-202.000.

Brois, Stanley J.: *See*—
Gutierrez, Antonio; Brownawell, Darrell W.; and Brois, Stanley J., 4,486,326, Cl. 252-49.700.

Brolund, Theodore F., to W. A. Whitney Corp. Apparatus for changing the tools of a punch press. 4,485,549, Cl. 29-568.000.

Brost, Dale F.: *See*—
Davis, Lorne A., Jr.; and Brost, Dale F., 4,486,714, Cl. 324-376.000.

Broszat, Gottfried, to Transformatoren Union Aktiengesellschaft. Disc coil winding of interwound single or double coils. 4,486,730, Cl. 336-69.000.

Brous, Donald W. Ultrafiltration in hemodialysis. 4,486,303, Cl. 210-87.000.

Brouwer, Frans, to ESAB, North America, Inc. Optical pattern tracing system with improved manual control. 4,486,654, Cl. 250-202.000.

Brown, Boveri & Cia AG: *See*—
Hegewaldt, Fritz; and Dotsch, Erwin, 4,486,889, Cl. 373-142.000.

Brown, Boveri & Cie AG: *See*—
Claussen, Claus-Jurgen, 4,486,802, Cl. 361-93.000.

Brown, Peter K., to Honeywell Inc. Creosote buildup detector and annunciator. 4,486,743, Cl. 340-584.000.

Brown & Sharpe Manufacturing Company: *See*—
Guertin, Raymond J.; Kang, Chuhong; and Matthews, Peter P., 4,485,594, Cl. 51-165.710.

Brown, Wade R., to Coca-Cola Company, The. Diluent valve actuator assembly for beverage dispensers. 4,485,940, Cl. 222-129.100.

Brown, William D.: *See*—
Millard, Ernest C.; and Brown, William D., 4,486,372, Cl. 264-137.000.

Brownawell, Darrell W.: *See*—
Gutierrez, Antonio; Brownawell, Darrell W.; and Brois, Stanley J., 4,486,326, Cl. 252-49.700.

Brumwell, Dennis A.: *See*—
Anderson, Kenneth M.; and Brumwell, Dennis A., 4,485,813, Cl. 128-675.000.

Brunson, Amber N.; Brunson, Deighton E.; and Ray, Walter W., Jr., to Brunson Instrument Company. Dual axis inclination measuring apparatus and method. 4,486,844, Cl. 364-559.000.

Brunson, Deighton E.: *See*—
Brunson, Amber N.; Brunson, Deighton E.; and Ray, Walter W., Jr., 4,486,844, Cl. 364-559.000.

Brunson Instrument Company: *See*—
Brunson, Amber N.; Brunson, Deighton E.; and Ray, Walter W., Jr., 4,486,844, Cl. 364-559.000.

Buchegger, Joachim; and Radzio, Andrej, to Hauni-Werke Korber & Co. KG. Method and apparatus for testing the ends of cigarettes or the like. 4,486,098, Cl. 356-445.000.

Buchel, Karl H.: *See*—
Reiser, Wolf; Draber, Wilfried; Buchel, Karl H.; Lurssen, Klaus; Frohberger, Paul-Ernst; and Paul, Volker, 4,486,218, Cl. 71-76.000.

Bucker, Heinrich: *See*—
Icking, Friedrich; and Bucker, Heinrich, 4,485,830, Cl. 134-100.000.

Buckhorn Material Handling Group Inc.: *See*—
Tabler, Charles P., 4,485,910, Cl. 193-36.000.

Buckl, Hans: *See*—
von Raven, Axel; Buckl, Hans; and Kroner, Ulrich, 4,486,216, Cl. 71-8.000.

Buckler, Robert T., to Miles Laboratories, Inc. Urea-linked immunogens, antibodies, and preparative method. 4,486,344, Cl. 260-121.000.

Buckner, James E., to Ingram Corporation. Pipe pickup and laydown machine. 4,486,137, Cl. 414-22.000.

Budd Canada Inc.: *See*—
Brinkhof, Joseph B.; and Chang, Yih-Yi, 4,485,771, Cl. 123-142.50E.

Budd Company, The: *See*—
Cameron, George, 4,485,911, Cl. 198-345.000.

Bujtas nee Tolgyes, Klara: *See*—
Schwartz, Jozsef; Hornyak nee Hamori, Marya; Sagi, Janos; Marmarosi nee Kellner, Katalin; Radvanyi nee Hegedus, Erzsebet; Szigeti, Zoltan; Cseh, Edit; and Bujtas nee Tolgyes, Klara, 4,486,222, Cl. 71-100.000.

Bullis, Robert H.: *See*—
Kimberley, John A.; and Bullis, Robert H., 4,485,794, Cl. 123-569.000.

Burke, John P.; and Young, Alastair J., to Automotive Products plc. Rotary transmission. 4,485,687, Cl. 74-358.000.

Burleigh, John E.: *See*—
Uraneck, Carl A.; and Burleigh, John E., 4,485,833, Cl. 152-209.00R.

Burlington Industries, Inc.: *See*—
Sookne, Arnold M., 4,486,485, Cl. 428-198.000.

Burmester, Holger; and Veeser, Klaus, to Carl Freudenberg, Firma. Cushion body. 4,486,493, Cl. 428-253.000.

Burrig, Thomas: *See*—
Richter, Detlev; and Burrig, Thomas, 4,486,896, Cl. 378-108.000.

Burroughs Corporation: *See*—
Lipkes, Zeev, 4,485,958, Cl. 228-19.000.
Ragle, Herbert U., 4,485,674, Cl. 73-432.00R.
Stopper, Herbert, 4,486,705, Cl. 324-73.00R.

Burroughs Wellcome Co.: *See*—
Caldwell, Albert G.; and Whittaker, Norman, 4,486,443, Cl. 424-273.00R.

Bush Boake Allen Limited: *See*—
Webb, David, 4,486,607, Cl. 568-425.000.

Bush, Ira J., to United States of America, Navy. Phase-lock fiber optic interferometer. 4,486,657, Cl. 250-227.000.

Bush Universal, Inc.: *See*—
Bowler, Raymond M., 4,485,951, Cl. 227-7.000.

Bushell, Donald D.: *See*—
Drewitz, Arthur O.; and Bushell, Donald D., 4,486,004, Cl. 254-2.00B.

Busse, Oswald; and Klesper, Hugo, to Passavant-Werke AG & Co. KG. Filter press with filter plates mutually locked and individually consecutively slidable after release of locking means. 4,486,306, Cl. 210-230.000.

Busse, Wilfried. Apparatus for pressure fitting a tube in a plate, e.g. a tube sheet. 4,485,547, Cl. 29-523.000.

Buttner, Gerhard: *See*—
Lesthe, Manfred; Allenbach, Udo; Buttner, Gerhard; and Christmann, Karl-Friedrich, 4,486,611, Cl. 568-653.000.

Byrne, Joe L.; and Egli, Hans, to Garrett Corporation, The. Turbocharger and rotor shaft assembly. 4,486,147, Cl. 416-213.00R.

Cahalan, Patrick T.; and Schwinghammer, Michelle A., to Medtronic, Inc. Combination ion selective sensing electrode. 4,486,290, Cl. 204-414.000.

Caines, R. Scott, to American Hoechst Corporation. Polyester film primed with organic acid salts. 4,486,483, Cl. 428-195.000.

Caldwell, Albert G.; and Whittaker, Norman, to Burroughs Wellcome Co. Hydantoin derivatives and pharmaceutical use. 4,486,443, Cl. 424-273.00R.

California Institute of Technology: *See*—
du Fresne, Eugene R., 4,486,239, Cl. 134-11.000.

Caliri, John S. Production of a decorative wood panel with simulated wood inlay. 4,486,371, Cl. 264-78.000.

Callewaert, Danilo F., to N.V. Safinco. Process for obtaining a gel-forming protein product. 4,486,345, Cl. 260-123.500.

Calspan Corporation: *See*—
Akers, Charles K.; and Pilie , Roland J., 4,485,490, Cl. 2-2.000.
Akers, Charles K., 4,485,806, Cl. 128-1.00R.

Pilie, Roland J.; Shoemaker, Norris E.; and Akers, Charles K., 4,485,489, Cl. 2-2.000.
Pilie, Roland J.; Baum, Albert S.; and Russo, Anthony L., 4,485,534, Cl. 24-384.000.
Calvino, Ben J., to Westinghouse Electric Corp. High-voltage Y-shaped dead tank circuit interrupter. 4,486,633, Cl. 200-148.00R.
Camarda, Charles J.; and Couch, Lana M., to United States of America, National Aeronautics and Space Administration. Heat pipe cooled probe. 4,485,670, Cl. 73-179.000.
Cambria, Emanuel F., to Hurst Performance, Inc. Shift control assembly. 4,485,689, Cl. 74-477.000.
Cameron, George, to Budd Company, The. Transfer machine. 4,485,911, Cl. 198-345.000.
Campagnolo S.p.A.: *See*—
Campagnolo, Tullio, 4,486,184, Cl. 474-165.000.
Campagnolo, Tullio, to Canipagnolo S.p.A. Free-wheel for bicycles. 4,486,184, Cl. 474-165.000.
Campbell, Loyal E. Drinking mug. 4,485,637, Cl. 62-457.000.
Campion, Brian S., to British Aerospace Public Limited Company. Aircraft propulsion means. 4,486,146, Cl. 416-129.000.
Campsey, Ronald L.: *See*—
Scott, Hubert D.; and Campsey, Ronald L., 4,486,658, Cl. 250-268.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government: *See*—
Shankhla, Vikram S.; and Langlois, Raymond, 4,485,721, Cl. 89-15.000.
Canon Kabushiki Kaisha: *See*—
Edakubo, Hiroo; and Maeda, Masaya, 4,486,792, Cl. 360-10.200.
Endo, Kiyonobu; and Nose, Noriyuki, 4,486,096, Cl. 356-225.000.
Harigaya, Isao; and Yamataka, Akihiro, 4,486,849, Cl. 364-715.000.
Kitamura, Takashi; and Ito, Michio, 4,486,088, Cl. 355-3.0CH.
Konno, Akira, 4,486,745, Cl. 340-734.000.
Misumi, Teruo; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Shirai, Shigeru, 4,486,521, Cl. 430-65.000.
Sato, Tadashi; and Tsunoi, Haruo, 4,486,786, Cl. 358-293.000.
Sato, Yasuhisa, 4,486,074, Cl. 350-255.000.
Takahashi, Yuji, 4,486,015, Cl. 271-305.000.
Tanaka, Nobuyoshi; and Kinoshita, Takao, 4,486,783, Cl. 358-213.000.
Toyomura, Shigeru, 4,486,759, Cl. 346-76.0PH.
Capasso, Federico, to AT&T Bell Laboratories. Avalanche photodetector including means for separating electrons and holes. 4,486,765, Cl. 357-13.000.
Capdevielle, Patrice J. G.: *See*—
Maumy, Michel; Capdevielle, Patrice J. G.; Dostert, Philippe L.; and Langlois, Michel, 4,486,349, Cl. 260-239.00A.
Carcia, Peter P.; and Coppa, Richard J., to Polaroid Corporation. Method of and apparatus for altering sensitivity of photometer to different scene portions. 4,486,087, Cl. 354-434.000.
Cardone, Paul A., to Polaroid Corporation. Apparatus for controlling random charges on a moving web. 4,486,808, Cl. 361-235.000.
Carl Freudenberg, Firma: *See*—
Burmester, Holger; and Veeser, Klaus, 4,486,493, Cl. 428-253.000.
Carl Still GmbH & Co. KG, Firma: *See*—
Lorenz, Kurt, 4,486,271, Cl. 202-248.000.
Carmichael, D. Murphy; Davis, Walter L.; and Perry, Vernon L., to Key Electrosonic Corporation. Article alignment and conveying apparatus. 4,485,912, Cl. 198-382.000.
Carpet Clinic Ltd.: *See*—
Collier, David S., 4,485,519, Cl. 15-359.000.
Carrell, Edward A.; and Spivey, David H., to Flair-Emsco Corporation. Occupancy responsive temperature control system. 4,485,864, Cl. 165-11.00R.
Carrier Corporation: *See*—
Karns, Phil J., 4,485,642, Cl. 62-515.000.
Carriere, David B.; and Lauzon, Rodrigue V., to NL Industries, Inc. Borehole drilling fluid and method. 4,486,316, Cl. 252-8.50C.
Carrigan, Richard M. Luggage carrier. 4,486,027, Cl. 280-655.000.
Carrison, Craig L., to Honeywell Inc. Capacitive supplement multiplier apparatus. 4,486,893, Cl. 377-60.000.
Carson, Douglas T. Engine. 4,485,769, Cl. 123-61.00R.
Carter, Cecil G., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Underwater acoustic devices. 4,486,869, Cl. 367-154.000.
Cartmell, Robert L.; and Berning, Cletus F. Pulsation device for a heating or cooling unit. 4,485,966, Cl. 236-46.00R.
Casperson, John R., to Phillips Petroleum Company. Feedstock nozzle for low tint residual carbon black. 4,486,398, Cl. 423-450.000.
Cassella Aktiengesellschaft: *See*—
Bauer, Wolfgang; Kuhlein, Klaus; and Nagl, Gert, 4,486,350, Cl. 260-245.860.
Castleman, Lawrence D. Intraocular posterior chamber lens. 4,485,499, Cl. 3-13.000.
Cataldo, Roy S., to General Motors Corporation. Friction drive chain. 4,486,185, Cl. 474-201.000.
Catlow, George W., to Micro Consultants Limited. Object recognition. 4,486,775, Cl. 358-106.000.
Caverly, John C., to Ford Motor Company. Method of attaching a metal shaft to a ceramic shaft and product thereof. 4,485,545, Cl. 29-447.000.
Cavil, David T., to Outboard Marine Corporation. Marine propulsion device including thrust bushing anode. 4,486,181, Cl. 440-49.000.
Cecchi, Gianfranco. Cutter arbor having helicoidal cutters for wood planing machines. 4,485,858, Cl. 144-221.000.
Celanese Corporation: *See*—
Arons, Richard M.; and David, Lawrence D., 4,486,401, Cl. 423-594.000.
Celerier, Gerard: *See*—
Esayan, Mariana; Celerier, Gerard; and Bonhomme, Nicolas M., 4,486,383, Cl. 376-299.000.
Central Quality Industries, Inc.: *See*—
Eichholz, Arthur H., 4,485,944, Cl. 222-390.000.
Centre de Recherches Metallurgiques-Centrum Voor Research In de Metallurgie: *See*—
Lambert, Nicole; Simon, Pierre; and Conti, Rene , 4,486,243, Cl. 148-12.00R.
Centre National de la Recherche Scientifique-C.N.R.S.: *See*—
Le Goff, Pierre Y. J., 4,485,629, Cl. 60-659.000.
Centre Stephanois De Recherches Mecanmiques Hydromecanique et Frottement: *See*—
Aubert, Andre ; Chevallier, Jacques; Gaucher, Antoine; and Terrat, Jean-Paul, 4,486,285, Cl. 204-192.00C.
Cestari, Bruno; Forlani, Riccardo; and Gontero, Piero, to Ing. C. Olivetti & C., S.p.A. Electrophotographic copier. 4,486,091, Cl. 355-3.0TR.
Chakrabarti, Jiban K.; and Hotten, Terrence M., to Lilly Industries Limited. 4-Substituted-1-(3-[2-aminoanilino]-1-pyrazole-4-carbonyl)-piperazine. 4,486,591, Cl. 544-371.000.
Champion International Corporation: *See*—
Roccaforte, Harry I., 4,485,581, Cl. 43-121.000.
Champlin, Keith S.; Preimesberger, Ernest C.; Meyer, Larry A.; and Miller, George W., to FMC Corporation. Synchronous time-shared data bus system. 4,486,852, Cl. 364-900.000.
Chan, Bing G.: *See*—
Watson, John C.; and Chan, Bing G., 4,486,804, Cl. 361-104.000.
Chan, Yiu-Fai; and Evans, Allen L., to Intersil, Inc. Monolithic CMOS low power digital level shifter. 4,486,670, Cl. 307-264.000.
Chaney, Earl J., Jr., to Union Carbide Corporation. Hermetically sealed galvanic cell having safety vent construction. 4,486,514, Cl. 429-56.000.
Chang, Chong E., to Alpha Therapeutic Corporation. Fractionation of blood plasma. 4,486,341, Cl. 260-112.00B.
Chang, Yih-Yi: *See*—
Brinkhof, Joseph B.; and Chang, Yih-Yi, 4,485,771, Cl. 123-142.50E.
Charles Stark Draper Laboratory, Inc., The: *See*—
De Fazio, Thomas L., 4,485,562, Cl. 33-185.00R.
Chee, Jeffrey. Gate latch. 4,486,042, Cl. 292-246.000.
Chemische Werke Huels, A.G.: *See*—
Balzer, Dieter; and Kosswig, Kurt, 4,485,873, Cl. 166-274.000.
Chemplex Company: *See*—
Machonis, John, Jr.; Schmukler, Seymour; Zeitlin, Robert J.; and Shida, Mitsuzo, 4,486,469, Cl. 427-195.000.
Chen, Youn-Long. Door-closing hinge having a spring and pin mechanism. 4,485,522, Cl. 16-54.000.
Chen, Yung-Shih; Belani, Jagdish G.; and Sajja, Vijay, to National Semiconductor Corporation. Solder composition for thin coatings. 4,486,511, Cl. 428-620.000.
Chern, Jen-Tsair. Storage battery electrolyte leak and over-replenishment preventing device. 4,486,515, Cl. 429-72.000.
Chernousov, Alexandr F.; Domrachev, Sergei A.; Ivanov, Alexei I.; Malyshev, Boris N.; Saljuk, Viktor A.; Skobelkin, Oleg K.; and Brekhov, Evgeny I., to Vsesojuzny Nauchny Tsentr Khirurgii. Resection apparatus. 4,485,811, Cl. 128-303.100.
Chertov, Viktor A.: *See*—
Gorbacheva, Irina N.; Sukhova, Ljudmila M.; Kozinda, Zinaida J.; Molokov, Vladislav L.; Antonov, Lev T.; Simonov, Vadim D.; Chertov, Viktor A.; Dvoskin, Semen I.; and Veseneva, Raisa S., 4,486,347, Cl. 534-797.000.
Chevallier, Jacques: *See*—
Aubert, Andre ; Chevallier, Jacques; Gaucher, Antoine; and Terrat, Jean-Paul, 4,486,285, Cl. 204-192.00C.
Chevron Research Company: *See*—
Davis, Bruce W., 4,485,871, Cl. 166-266.000.
Dimpfl, William L., 4,486,535, Cl. 436-2.000.
Muir, Francis, 4,486,866, Cl. 367-39.000.
Chibata, Ichiro; Tosa, Tetsuya; Sato, Tadashi; and Yamamoto, Kozo, to Tnanbe Seiyaku Co., Ltd. Process for preparing L-malic acid. 4,486,532, Cl. 435-145.000.
Chichester, Willard L.; and Trusock, George J., to Clark Equipment Company. Vehicle hydraulic system with pump speed control. 4,485,623, Cl. 60-422.000.
Chigasaki, Mitsuo; Otaka, Kiyoshi; Okayama, Akira; Onisawa, Kenichi; and Soeno, Ko, to Hitachi, Ltd. Method of producing nickel base alloy structure with NiAl coating. 4,486,245, Cl. 148-13.100.
Chihak, Paul P., to Rockwell International Corporation. Pulse width discriminator applicable to ATC transponders. 4,486,752, Cl. 340-825.630.
Childcraft Education Corporation: *See*—
Shackelford, Wendell; and Watkins, Dwight G., 4,485,585, Cl. 446-117.000.
Chimicasa GmbH: *See*—
Wolf, Erich; and Deininger, Rolf, 4,486,455, Cl. 426-548.000.
Chinoin Gyogyszer Es Vegyeszeti Termekek Gyara R.T.: *See*—
Szego , Andras; Kovats, Ferenc; Peterdi, Viktoria; Bone , Istvan; Gombos, Laszlo ; Oz, Ferenc; and Simon, Imre, 4,486,595, Cl. 548-306.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See*—
Schwartz, Jozsef; Hornyak nee Hamori, Marya; Sagi, Janos; Marmarosi nee Kellner, Katalin; Radvanyi nee Hegedus, Erzsebet; Szigeti, Zoltan; Cseh, Edit; and Bujtas nee Tolgyes, Klara, 4,486,222, Cl. 71-100.000.
Chisso Corporation: *See*—
Ando, Masao, 4,486,103, Cl. 374-5.000.
Chiyoda Chemical Engineering & Construction Co., Ltd.: *See*—
Inooka, Masayoshi, 4,486,295, Cl. 208-96.000.
Chmura, Stanley J.: *See*—
Beeman, Robert H.; and Chmura, Stanley J., 4,486,627, Cl. 179-175.30R.
Choay, Jean: *See*—
Lormeau, Jean C.; Choay, Jean; Goulay, Jean, deceased; Goulay, Marie T., heir; Goulay, Marie A., heir; and Goulay, Gerard, heir, 4,486,420, Cl. 424-183.000.
Choay, S.A.: *See*—
Lormeau, Jean C.; Choay, Jean; Goulay, Jean, deceased; Goulay, Marie T., heir; Goulay, Marie A., heir; and Goulay, Gerard, heir, 4,486,420, Cl. 424-183.000.
Chou, Billy J.: *See*—
Studt, William L.; Kuhla, Donald E.; Chou, Billy J.; and Yelnosky, John, 4,486,439, Cl. 424-263.000.
Christian, Raymond R.; Sue, Harry; Waggener, Herbert A.; and Zuercher, Joseph C., to Teletype Corporation. Method for manufacturing an integrated circuit device. 4,485,553, Cl. 29-589.000.
Christian, William C.: *See*—
Bernard, David A.; Bernard, Richard A.; and Christian, William C., 4,485,596, Cl. 51-219.00R.
Christmann, Karl-Friedrich: *See*—
Lenthe, Manfred; Allenbach, Udo; Buttner, Gerhard; and Christmann, Karl-Friedrich, 4,486,611, Cl. 568-653.000.
Christopher, Lauren A.; and Sprague, David L., to RCA Corporation. Incrementing/decrementing circuit as for a FIR filter. 4,486,851, Cl. 364-770.000.
Chu, Chin-Chiun; and Kaeding, Warren W., to Mobil Oil Corporation. Rejuvenation of deselectivated alkylation catalyst. 4,486,616, Cl. 585-466.000.
Chu, Pak J., to Northern Telecom Limited. Pushbutton switch assembly. 4,486,637, Cl. 200-340.000.
Chujo, Takeshi: *See*—
Tsuge, Eiji; and Chujo, Takeshi, 4,485,707, Cl. 83-82.000.
Chung, James Y. J.; Jones, Jesse D.; and Li, Hsueh M., to Ethyl Corporation. Injection-moldable thermoplastic polyester composition. 4,486,561, Cl. 524-107.000.
Chung, Rack H., to General Electric Company. Solventless, ultraviolet radiation-curable silicone coating compositions. 4,486,504, Cl. 428-412.000.
Churyo Engineering Co., Ltd.: *See*—
Yoshida, Yukio; Tanaka, Akira; Fukumoto, Ryutaro; Akimoto, Ryosaku; Tanaka, Shigetoshi; and Ito, Nobuaki, 4,485,863, Cl. 165-42.000.
Ciba-Geigy Corporation: *See*—
Eldin, Sameer H., 4,486,494, Cl. 428-260.000.
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,486,224, Cl. 71-105.000.
Koller, Hans; and Zingel, Heinz, 4,486,261, Cl. 156-461.000.
Lund, Richard B., 4,486,610, Cl. 568-637.000.
Moser, Hans, 4,486,358, Cl. 260-502.50F.
Mueller, Karl F.; Heiber, Sonia J.; and Plankl, Walter L., 4,486,577, Cl. 525-474.000.
Puntener, Alois, 4,486,196, Cl. 8-437.000.
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,486,596, Cl. 549-239.000.
Ciga-Geigy Corporation: *See*—
Wehner, Wolfgang; and Ackermann, Peter, 4,486,424, Cl. 424-245.000.
Cincinnati Milacron Inc.: *See*—
Taylor, Ralph C., Jr.; and Vaniglia, Christopher L., 4,486,830, Cl. 364-146.000.
Clapham, Edward F.: *See*—
Moore, Alan; Harman, Geoffrey E.; Rosser, David G.; and Clapham, Edward F., 4,485,619, Cl. 60-39.093.
Clarion Co., Ltd.: *See*—
Kanai, Tsutomu; and Kizaki, Yoshio, 4,486,883, Cl. 371-67.000.
Clark Equipment Company: *See*—
Chichester, Willard L.; and Trusock, George J., 4,485,623, Cl. 60-422.000.
Claudet, Gerard: *See*—
Bon Mardion, Gilbert; Claudet, Gerard; and Locatelli, Marcel, 4,485,640, Cl. 62-514.00R.
Claussen, Claus-Jurgen, to Brown, Boveri & Cie AG. Driving circuit for short circuit-proof readout stages. 4,486,802, Cl. 361-93.000.
Clayton Dewandre Company Limited: *See*—
Hawker, Michael J.; and Mair, Joseph, 4,486,053, Cl. 303-119.000.
Clear Meadow Research Co.: *See*—
Reinauer, B. Franklin; and Dydo, Robert J., 4,486,625, Cl. 179-2.00A.
Clegg, Roy: *See*—
Martin, Stephen; and Clegg, Roy, 4,485,649, Cl. 72-10.000.
Clemence, Francois; Le Martret, Odile; and Delevallee, Francoise, to Roussel Uclaf. 4-Hydroxy-3-quinoline-carboxylic acid derivatives. 4,486,438, Cl. 424-258.000.
Cline, Jay D., to Dayton-Granger, Inc. Lightning arrester with improved spark gap structure. 4,486,805, Cl. 361-133.000.
Cloud, Charles E.: *See*—
Cloud, David A.; Cloud, Charles E.; Pearson, William N.; and Hartman, Donn A., 4,486,452, Cl. 426-306.000.
Cloud Corporation: *See*—
Cloud, David A.; Cloud, Charles E.; Pearson, William N.; and Hartman, Donn A., 4,486,452, Cl. 426-306.000.
Cloud, David A.; Cloud, Charles E.; Pearson, William N.; and Hartman, Donn A., to Cloud Corporation. Method for manufacture of candy. 4,486,452, Cl. 426-306.000.
Coal Industry (Patents) Limited: *See*—
Higgins, John C.; Wright, Harvie R. C.; and Trainer, David, 4,485,666, Cl. 73-23.000.
Page, Dennis; and Fox, Edward J., 4,486,894, Cl. 378-46.000.
Coca-Cola Company, The: *See*—
Brown, Wade R., 4,485,940, Cl. 222-129.100.
King, Eddie W.; and Hughes, Robert D., IV, 4,485,633, Cl. 62-180.000.
Codex Corporation: *See*—
Yuni, William, 4,486,854, Cl. 364-900.000.
Cohen, Stephen R. Mirror assembly for a vehicle. 4,486,075, Cl. 350-603.000.
Cohn, Johann Gunther E.; and Adlhart, Otto J., to Engelhard Corporation. Method for suppressing hydrogen formation in an electrolytic cell. 4,486,276, Cl. 204-98.000.
Coleco Industries, Inc.: *See*—
Sledesky, Stephen M., 4,486,629, Cl. 200-6.00A.
Coleman, Clyde F., to RCA Corporation. Carriage-actuated disc handling apparatus for video disc player. 4,486,874, Cl. 369-77.200.
Colgate-Palmolive Company: *See*—
Ellis, Roger D.; Demangeon, Yvon; and Jacques, Alain, 4,486,329, Cl. 252-117.000.
Knott, Christine A.; and Ryan, Joyce, 4,486,328, Cl. 252-117.000.
Collier, David S., to Carpet Clinic Ltd. Ozone cleaning system. 4,485,519, Cl. 15-359.000.
Colomb, Francois: *See*—
Angelier, Nicole; and Colomb, Francois, 4,485,641, Cl. 62-514.00R.
Colon, Ismael; and Merriam, Charles N., to Union Carbide Corporation. High-temperature, aromatic coating materials from aryl polyhalides. 4,486,576, Cl. 525-471.000.
Colortronic Co., Ltd.: *See*—
Noguchi, Haruo, 4,486,201, Cl. 55-96.000.
Columbia Chase Corporation: *See*—
Berthiaume, Camille J., 4,485,968, Cl. 239-8.000.
Colvin, David S. Reversible ratchet wrench. 4,485,700, Cl. 81-62.000.
Combustion Engineering, Inc.: *See*—
Riley, Brian, 4,486,400, Cl. 423-592.000.
Rooker, Mitchel L., 4,486,203, Cl. 55-174.000.
Wentzell, Timothy H., 4,485,847, Cl. 138-89.000.
Commissariat a l'Energie Atomique: *See*—
Bon Mardion, Gilbert; Claudet, Gerard; and Locatelli, Marcel, 4,485,640, Cl. 62-514.00R.
Commonwealth of Australia: *See*—
Crittenden, Mark D.; Lowe, Graeme J.; and McLaren, Neil S., 4,485,729, Cl. 98-1.500.
Wyber, Ronald J., 4,486,862, Cl. 367-13.000.
Compo Industries, Inc.: *See*—
MacDonald, Kenneth A., 4,485,754, Cl. 112-262.300.
Condec Corporation: *See*—
Schafler, R. S.; and Schafler, Norman I., 4,486,369, Cl. 264-51.000.
Connei S.p.A.: *See*—
Ghigliotti, Giovanni; and Lancella, Attilio, 4,486,068, Cl. 339-252.00P.
Connolly, Philip B.: *See*—
Walker, Neil J.; and Connolly, Philip B., 4,486,343, Cl. 260-112.00G.
Connolly, Richard S.: *See*—
Tippins, George W.; Thomas, John E.; Connolly, Richard S.; Pine, Charles K.; and Pottmeyer, Wayne G., 4,485,651, Cl. 72-12.000.
Consolidated Controls Corporation: *See*—
Reinicke, Robert H., 4,486,190, Cl. 604-67.000.
Consolidated Devices, Inc.: *See*—
Grabovac, Bosko; and Vuceta, Ivan, 4,485,703, Cl. 81-483.000.
Container Corporation of America: *See*—
Desmond, John D.; and Feirman, Barbara M., 4,485,922, Cl. 206-485.000.
Lenzmeier, Thomas E., 4,485,926, Cl. 206-602.000.
Conti, Rene : *See*—
Lambert, Nicole; Simon, Pierre; and Conti, Rene , 4,486,243, Cl. 148-12.00R.
Contitronix, Inc.: *See*—
Hamati, Sharbil; and Heard, M. Alvin, 4,486,693, Cl. 318-561.000.
Control Data Corporation: *See*—
Mittelsteadt, Robert A., 4,486,639, Cl. 219-10.55B.
Convent Knabber-Geback GmbH & Co. KG: *See*—
Pfeilstetter, Hans, 4,486,163, Cl. 425-133.100.
Conway, Raymond J.: *See*—
Dulian, Robert J.; Kemp, David M.; Jones, Hartl R.; and Conway, Raymond J., 4,485,856, Cl. 141-198.000.
Cook, Charles S.: *See*—
Wilkie, Robert R.; and Cook, Charles S., 4,486,164, Cl. 425-525.000.
Cook, Clifton L., to Michaels of Oregon Co. Handgun holster with contractive shape memory. 4,485,947, Cl. 224-243.000.
Cook, Clifton L., to Michaels of Oregon Co. Hand gun holster with abrasion-resistant longitudinal spine. 4,485,948, Cl. 224-243.000.

Cooke, Charles S.: *See*—
Wilkie, Robert R.; and Cooke, Charles S., 4,486,379, Cl. 264-526.000.

Cooper, Glenn D., to Westinghouse Electric Corp. Dual-ring gland seal for dynamoelectric machine rotor. 4,486,024, Cl. 277-3.000.

Coppa, Richard J.: *See*—
Carcia, Peter P.; and Coppa, Richard J., 4,486,087, Cl. 354-434.000.

Cordis Corporation: *See*—
Leckrone, Michael E.; and Cutolo, Vincent T., Jr., 4,485,818, Cl. 128-419.0PG.

Cornelius, Rajendra S.; Lunk, Hans E.; Martin, Albert R.; and Mendenhall, Mark D., to Raychem Corporation. High frequency attenuation core and cable. 4,486,721, Cl. 333-1.000.

Corning Glass Works: *See*—
Berkey, George E., 4,486,212, Cl. 65-2.000.
Lentz, William P.; Seward, Thomas P., III; and Shay, George C., 4,486,213, Cl. 65-30.110.

Corsmeier, Joseph W., Jr. Flatware sorter. 4,485,927, Cl. 209-621.000.

Cosco, Inc.: *See*—
Maloney, Kevin; and Schroer, Charles E., 4,485,892, Cl. 182-161.000.

Costales, Mark J.; Paroonagian, Doris L.; and Reifschneider, Walter, to Dow Chemical Company, The. Insecticidal phosphorus derivatives of 4-pyrimidinols. 4,486,421, Cl. 424-200.000.

Costales, Mark J.; Reifschneider, Walter; and Paroonagian, Doris L., to Dow Chemical Company, The. Insecticidal phosphorus derivatives of 5-pyrimidinols. 4,486,422, Cl. 424-200.000.

Couch, Lana M.: *See*—
Camarda, Charles J.; and Couch, Lana M., 4,485,670, Cl. 73-179.000.

Coue, Maurice E. L., to Huret et ses Fils. Derailleur mechanism for a bicycle. 4,486,182, Cl. 474-80.000.

Coughlin, James E.; Sommerfeld, Eugene G.; and Strolle, Clifford H. Laminates from an adhesive formed by a system containing an hydroxyl-terminated polymer, an isocyanate-terminated urethane and a polyisocyanate which is a cross-linking agent. 4,486,508, Cl. 428-480.000.

Coulter, Albert G., to Ferranti plc. Optical image projector. 4,486,081, Cl. 353-27.00R.

Couput, Jean-Paul: *See*—
Lalauze, Rene ; Pijolat, Christophe; and Couput, Jean-Paul, 4,485,667, Cl. 73-23.000.

Cover, John H. Thermal energy conversion. 4,486,701, Cl. 322-2.00R.

Covey, Geoffrey H.: *See*—
Nguyen, Kien L.; Keogh, Andrew J.; and Covey, Geoffrey H., 4,486,394, Cl. 423-155.000.

Cox, Richard V.; and Crochiere, Ronald E., to AT&T Bell Laboratories. Real time pitch detection by stream processing. 4,486,900, Cl. 381-38.000.

Creusot-Loire: *See*—
Fournier, Yves; Rigoulot, Claude; and Mainy, Pierre, 4,485,560, Cl. 33-178.00F.

Critikon, Inc.: *See*—
Blackburn, Gary F., 4,486,292, Cl. 204-416.000.

Crittenden, Mark D.; Lowe, Graeme J.; and McLaren, Neil S., to Commonwealth of Australia. Control of the atmosphere in an enclosure. 4,485,729, Cl. 98-1.500.

Crochiere, Ronald E.: *See*—
Cox, Richard V.; and Crochiere, Ronald E., 4,486,900, Cl. 381-38.000.

Crommelynck, Roger; and Quartier, Eddy, to N. V. Bekaert S. A. Method and machine for removing at least one layer of reinforcing elements from a breaker or belt of a rubber tire. 4,486,255, Cl. 156-98.000.

Crook, Philip A. Lawn mower scraper. 4,485,516, Cl. 15-236.00R.

Crozier, Peter A.: *See*—
Ackert, Robert J.; Witty, Robert W.; and Crozier, Peter A., 4,486,248, Cl. 148-145.000.

Crucible Society Anonyme: *See*—
Bredenkamp, Gordon L., 4,486,038, Cl. 290-1.00R.

Cryosan, Inc.: *See*—
Darnell, John W.; and Kuzyk, Roman, 4,486,389, Cl. 422-307.000.

Cseh, Edit: *See*—
Schwartz, Jozsef; Hornyak nee Hamori, Marya; Sagi, Janos; Marmarosi nee Kellner, Katalin; Radvanyi nee Hegedus, Erzsebet; Szigeti, Zoltan; Cseh, Edit; and Bujtas nee Tolgyes, Klara, 4,486,222, Cl. 71-100.000.

Csorvassy, Istvan: *See*—
Brendel nee Hajnoczki, Marta; Gulyas, Imre; Gyoker, Istvan; Zsupan, Kalman; Csorvassy, Istvan; Salamon, Zoltan; Somogyi, Gabor; Szentkiralyi, Istvan; Timar, Tibor; Biro nee Czapary, Eva; Fodor, Istvan; and Repasi, Janos, 4,486,359, Cl. 260-502.50F.

Cukor, Peter: *See*—
Rubner, Michael F.; and Cukor, Peter, 4,486,463, Cl. 427-53.100.

Cullinan, George J.: *See*—
Marshall, Winston S.; Fleisch, Jerome H.; and Cullinan, George J., 4,486,432, Cl. 424-250.000.

Cummins Engine Company, Inc.: *See*—
Wong, Victor W.; and Mogaka, Zablon N., 4,485,621, Cl. 60-274.000.

Cummins, Richard D., to R. D. Cummins, Incorporated. Loose leaf binder. 4,486,112, Cl. 402-34.000.

Cummins, Richard D., to R. D. Cummins, Incorporated. Claw binder. 4,486,113, Cl. 402-80.00P.

Cunneen, Charles N.: *See*—
Kowalski, Joseph W.; and Cunneen, Charles N., 4,485,998, Cl. 248-561.000.

Currall, William J. P., to Plessey Overseas Limited. Connector arrangements. 4,486,060, Cl. 339-15.000.

Curren, Kenneth J.: *See*—
May, Richard L.; and Curren, Kenneth J., 4,485,555, Cl. 33-18.00R.

Curry, John D.: *See*—
Murphy, Alan P.; Kassamali, Ali; and Curry, John D., 4,486,327, Cl. 252-94.000.

Cutolo, Vincent T., Jr.: *See*—
Leckrone, Michael E.; and Cutolo, Vincent T., Jr., 4,485,818, Cl. 128-419.0PG.

Czech, Joachim. Dispenser for liquids or pasty products. 4,485,943, Cl. 222-256.000.

D.O.C.E Corporation: *See*—
Ungerleider, Hugh J., 4,485,831, Cl. 137-1.000.

Da Giau, Asco: *See*—
Rolando, Walter; Da Giau, Asco; and Zogno, Mario, 4,485,503, Cl. 4-622.000.

Dainippon Ink and Chemicals, Inc.: *See*—
Hashimoto, Yutaka, 4,486,391, Cl. 423-9.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Yamada, Mitsuhiko; and Tokura, Isao, 4,485,964, Cl. 234-2.000.
Yamada, Mitsuhiko, 4,486,788, Cl. 358-298.000.

D'Alessandro, Sebastiano. Wood burning stove and oven. 4,485,797, Cl. 126-1.00A.

Dana Corporation: *See*—
Lane, Wendell C., Jr., 4,486,649, Cl. 219-536.000.

Danfoss A/S: *See*—
Romer, Bendt W.; and Lorentzen, Jens O., 4,486,153, Cl. 417-313.000.

Danno, Yoshiaki: *See*—
Nakagami, Tatsuro; and Danno, Yoshiaki, 4,485,777, Cl. 123-198.00F.

Darex Corporation: *See*—
Bernard, David A.; Bernard, Richard A.; and Christian, William C., 4,485,596, Cl. 51-219.00R.

Darnell, John W.; and Kuzyk, Roman, to Cryosan, Inc. Frozen plasma thawing system. 4,486,389, Cl. 422-307.000.

Dathe, Joachim; and Schmidhuber, Erich, to Siemens Aktiengesellschaft. Case for a semiconductor component. 4,486,622, Cl. 174-52.00H.

Daudelin, Douglas S., to AT&T Bell Laboratories. Microprocessor peripheral control circuit. 4,486,833, Cl. 364-200.000.

Daul, Michael J.: *See*—
Klemmer, Paul J.; and Daul, Michael J., 4,485,734, Cl. 100-168.000.

Davenport, Donald E.: *See*—
Patz, Gary L.; and Davenport, Donald E., 4,486,490, Cl. 428-245.000.

David, Gary S.; and Greene, Howard E., to Hybritech Incorporated. Immunometric assays using monoclonal antibodies. 4,486,530, Cl. 435-7.000.

David, Lawrence D.: *See*—
Arons, Richard M.; and David, Lawrence D., 4,486,401, Cl. 423-594.000.

Davies, Gareth M.: *See*—
Jung, Frederic H.; and Davies, Gareth M., 4,486,426, Cl. 424-246.000.

Davis, Bruce W., to Chevron Research Company. In-situ process for recovering hydrocarbons from a diatomite-type formation. 4,485,871, Cl. 166-266.000.

Davis, David W.; and Plumly, George W., to Plumly, George W. Emergency lighting apparatus and systems. 4,486,689, Cl. 315-92.000.

Davis, Lorne A., Jr.; and Brost, Dale F., to Texaco Inc. Method and apparatus for measuring relative permeability and water saturation of a core of earthen material. 4,486,714, Cl. 324-376.000.

Davis, Michael D., to Eaton Corporation. Rotary pump and improved discharge port arrangement. 4,486,150, Cl. 417-204.000.

Davis, Steven C.: *See*—
Klein, Dean A.; Davis, Steven C.; Wroblewski, Jerome J.; Baade, Otto; and Hinrichs, Earl L., 4,486,840, Cl. 364-474.000.

Davis, Walter L.: *See*—
Carmichael, D. Murphy; Davis, Walter L.; and Perry, Vernon L., 4,485,912, Cl. 198-382.000.

Davtron, Inc.: *See*—
Torresdal, David N., 4,486,077, Cl. 350-331.00R.

Davy McKee (Sheffield) Limited: *See*—
Martin, Stephen; and Clegg, Roy, 4,485,649, Cl. 72-10.000.

Dayton-Granger, Inc.: *See*—
Cline, Jay D., 4,486,805, Cl. 361-133.000.

Deak, Paul S.; Henderson, Dennis R.; and Voyles, Gerald A., to Emhart Industries, Inc. Anchoring means for a capacitor. 4,486,809, Cl. 361-272.000.

de Bennetot, Michel C., to La Material Magnetique. Device for converting rotational kinetic energy to heat by generating eddy currents. 4,486,638, Cl. 219-10.510.

De Boel, Marcel, to Glaverbel. Fire screening glazing panels. 4,485,601, Cl. 52-232.000.

de Calvino y Teijeiro, B. J., to Westinghouse Electric Corp. High-voltage circuit breaker with improved puffer means. 4,486,635, Cl. 200-148.00A.

Deckard, John I.; and Straub, Robert D., to General Motors Corporation. Electromagnetic unit fuel injector with cartridge type solenoid actuated valve. 4,485,969, Cl. 239-88.000.

de Cousanos, Tristan, to Thomson-CSF. Device for real-time correction of errors in data recorded on a magnetic medium. 4,486,881, Cl. 371-38.000.

Decroix, Jean-Claude: *See*—
Machon, Jean-Pierre; Le Brasseur, Genevieve; Decroix, Jean-Claude; and Hert, Marius, 4,486,579, Cl. 526-65.000.

De Fazio, Thomas L., to Charles Stark Draper Laboratory, Inc., The. Variable stiffness compliance device. 4,485,562, Cl. 33-185.00R.

Degen, Helmut: *See*—
Becker, Ernst; Bergmann, Udo; Degen, Helmut; Hansen, Guenter; and Krallmann, Reinhold, 4,486,198, Cl. 8-639.000.

Degremont: *See*—
Durot, Jean; and Moreau, Ronald, 4,486,361, Cl. 261-123.000.

Degussa Aktiengesellschaft: *See*—
Diehl, Manifred; Bergmann, Roland; and Stadtmuller, Gunter, 4,486,331, Cl. 252-174.250.
Kleemann, Axel; Lehmann, Bernd; and Deller, Klaus, 4,486,600, Cl. 562-567.000.

Deininger, Rolf: *See*—
Wolf, Erich; and Deininger, Rolf, 4,486,455, Cl. 426-548.000.

de Jong, J. N. M.; and Earle, R. L., to Sperry Corporation. Capacitive pressure transducer. 4,486,812, Cl. 361-283.000.

Dekker, Lambert: *See*—
Klemarczyk, Philip T.; Dekker, Lambert; and Kiwala, Jacob, 4,485,828, Cl. 131-276.000.

Delalande, S.A.: *See*—
Maumy, Michel; Capdevielle, Patrice J. G.; Dostert, Philippe L.; and Langlois, Michel, 4,486,349, Cl. 260-239.00A.

Delevallee, Francoise: *See*—
Clemence, Francois; Le Martret, Odile; and Delevallee, Francoise, 4,486,438, Cl. 424-258.000.

della Porta, Paolo, to S.A.E.S. Getters S.p.A. Getter assembly with U-shaped supports. 4,486,686, Cl. 313-481.000.

Dellas, James P., to Johnson & Johnson Products, Inc. Film window dressing. 4,485,809, Cl. 128-156.000.

Deller, Klaus: *See*—
Kleemann, Axel; Lehmann, Bernd; and Deller, Klaus, 4,486,600, Cl. 562-567.000.

Demangeon, Yvon: *See*—
Ellis, Roger D.; Demangeon, Yvon; and Jacques, Alain, 4,486,329, Cl. 252-117.000.

Demircan, Bayramadi; and Kussel, Willy, to Gewerkschaft Eisenhutte Westfalia. Hydraulic control apparatus. 4,485,724, Cl. 91-29.000.

Demizu, Michinosuke: *See*—
Naya, Eizo; Horiuchi, Toshiaki; Takeya, Yasushi; Inagaki, Kouichi; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,486,631, Cl. 200-144.00B.

Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Matthias; and Deresh, Sylvia, to VEB Werk fur Fernsehelektronik im VEB Kombinat Mikroelektronik. Liquid crystalline nematic substances. 4,486,332, Cl. 252-299.610.

Dennis, Kent S.: *See*—
Donate, Felipe A.; Bozzelli, John W.; and Dennis, Kent S., 4,486,614, Cl. 585-10.000.

Dennison Manufacturing Company: *See*—
Leahy, David J., 4,486,032, Cl. 281-46.000.

Denryoku-Chuo-Kenkyusho: *See*—
Arai, Taiji; and Kako, Saburo, 4,486,217, Cl. 71-25.000.

De Pous, Olivier; Richon, Dominique; and Novotny, Hans, to Battelle Memorial Institute. Titanium boride based sintering composition and the use thereof in the manufacture of sintered articles. 4,486,544, Cl. 501-96.000.

Derbyshkin, Valentin V.: *See*—
Shutov, Gennady M.; Erdman, Maya E.; Boltovsky, Valery S.; Solomakha, Adel I.; Nosevich, Alexandr F.; Pukhalsky, Miroslav E.; Kirichenko, Vladimir A.; and Derbyshkin, Valentin V., 4,486,475, Cl. 427-351.000.

Deresh, Sylvia: *See*—
Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Matthias; and Deresh, Sylvia, 4,486,332, Cl. 252-299.610.

Dermalogical Enterprises, Ltd.: *See*—
Bernstein, Joel E., 4,486,450, Cl. 424-324.000.

Derner, Paul; and Mertin, Dietrich, to BFG Glassgroup. Insulating glass window structure. 4,485,603, Cl. 52-398.000.

de Ronde, Frans C., to U.S. Philips Corporation. Antenna element for circularly polarized high-frequency signals. 4,486,758, Cl. 343-700.0MS.

Deschapelles, Jorge B.; and Haisr, Mark J., to Kaiser Aluminum & Chemical Corporation. Rolling ingot. 4,486,509, Cl. 428-582.000.

Desmond, John D.; and Feirman, Barbara M., to Container Corporation of America. Tray for carded products. 4,485,922, Cl. 206-485.000.

Desmond, Mike J.: *See*—
Eshraghi, Reza; Pesa, Frederick A.; and Desmond, Mike J., 4,486,397, Cl. 423-306.000.

Dev, Harsh: *See*—
Sresty, Guggilam C.; Dev, Harsh; Snow, Richard H.; and Bridges, Jack E., 4,485,868, Cl. 166-248.000.

De Vincentiis, Leonardo, to Ausonia Farmaceutici s.r.l. Phthalidyl apovincaminate with cerebral eubolic activity. 4,486,437, Cl. 424-256.000.

Deyoung, David M., to Magnetic Controls Company. Receptacle assembly. 4,486,059, Cl. 339-14.00R.

Deyrup, Edward J., to Du Pont de Nemours, E. I., and Company. Molding compositions. 4,486,564, Cl. 524-308.000.

Dezawa, Shin-ichiro; Akashi, Goro; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,486,496, Cl. 428-328.000.

Dickinson, William B.: *See*—
Lesher, George Y.; and Dickinson, William B., 4,486,431, Cl. 424-250.000.

Diefenbach, Gerhard; and Krainer, Erich, to U.S. Philips Corporation. Reversing device for a two-pole single-phase synchronous motor. 4,486,697, Cl. 318-703.000.

Diehl, Manifred; Bergmann, Roland; and Stadtmuller, Gunter, to Degussa Aktiengesellschaft. Aqueous stable suspension of water insoluble silicate capable of binding calcium ions and its use for the production of washing and cleansing agents. 4,486,331, Cl. 252-174.250.

Dilling, Peter, to Westvaco Corporation. Color reduction process for non-sulfonated lignin. 4,486,346, Cl. 530-501.000.

Dillingham, Julia E. Bag filling kit. 4,485,855, Cl. 141-316.000.

Dillion, Paul J.: *See*—
Stumpf, Walter; and Dillion, Paul J., 4,485,506, Cl. 5-477.000.

Dimpfl, William L., to Chevron Research Company. Method and apparatus for measuring particle size. 4,486,535, Cl. 436-2.000.

Dionex Corporation: *See*—
Slingsby, Rosanne W.; and Pohl, Christopher A., 4,486,312, Cl. 210-656.000.

Disharoon, Dale R. Methods and apparatus for cutting a substrate. 4,485,706, Cl. 83-42.000.

Dixon, Arthur R. Sports board games. 4,486,022, Cl. 273-256.000.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Gruden, Dusan, 4,485,783, Cl. 123-406.000.
Hofbauer, August; Steinbeck, Herbert; and Weiner, Hans, 4,485,788, Cl. 123-452.000.

Dr. Karl Thomae Gesellschaft mit beschrankter Haftung: *See*—
Hurnaus, Rudolf; Griss, Gerhart; Sauter, Robert; Grell, Wolfgang; Kobinger, Walter; and Pichler, Ludwig, 4,486,433, Cl. 424-250.000.

Doi, Haruo: *See*—
Kamigaito, Osami; Doi, Haruo; and Fukushima, Yoshiaki, 4,486,235, Cl. 106-287.120.

Dolby Laboratories Licensing Corporation: *See*—
Todd, Craig C., 4,486,793, Cl. 360-30.000.

Domjan, Laszlo ; Balint, Geza; and Bozsoky, Sandor, to Medicor Muvek. Instrument for measuring positions and displacements of joints and spinal column (arthrospinometer). 4,485,825, Cl. 128-774.000.

Domrachev, Sergei A.: *See*—
Chernousov, Alexandr F.; Domrachev, Sergei A.; Ivanov, Alexei I.; Malyshev, Boris N.; Saljuk, Viktor A.; Skobelkin, Oleg K.; and Brekhov, Evgeny I., 4,485,811, Cl. 128-303.100.

Donate, Felipe A.; Bozzelli, John W.; and Dennis, Kent S., to Dow Chemical Company, The. Anionic polymerization of cis- and trans-1,3-pentadiene from a mixture of saturated and unsaturated hydrocarbons. 4,486,614, Cl. 585-10.000.

Donn Incorporated: *See*—
LaLonde, Paul D., 4,485,605, Cl. 52-665.000.

Donofrio, John J., to Amchem Products, Inc. Composition and process for treating steel. 4,486,241, Cl. 148-6.15Z.

Dostert, Philippe L.: *See*—
Maumy, Michel; Capdevielle, Patrice J. G.; Dostert, Philippe L.; and Langlois, Michel, 4,486,349, Cl. 260-239.00A.

Dotsch, Erwin: *See*—
Hegewaldt, Fritz; and Dotsch, Erwin, 4,486,889, Cl. 373-142.000.

Dotta, Angelo. Punching device. 4,485,713, Cl. 83-543.000.

Douchy, Michel; Tranchant, Jean-Louis; and Jehan, Michel, to Vallourec. Manufacture of a composite tubular product. 4,486,227, Cl. 75-53.000.

Dow Chemical Company, The: *See*—
Costales, Mark J.; Paroonagian, Doris L.; and Reifschneider, Walter, 4,486,421, Cl. 424-200.000.
Costales, Mark J.; Reifschneider, Walter; and Paroonagian, Doris L., 4,486,422, Cl. 424-200.000.
Donate, Felipe A.; Bozzelli, John W.; and Dennis, Kent S., 4,486,614, Cl. 585-10.000.
Fazio, Michael J., 4,486,554, Cl. 525-279.000.
Hefner, Robert E., Jr., 4,486,582, Cl. 526-301.000.
Lysenko, Zenon; and Pews, Richard G., 4,486,608, Cl. 568-466.000.
Niemann, Debra H., 4,486,552, Cl. 523-169.000.
Pews, R. Garth, 4,486,612, Cl. 568-812.000.
Pews, Richard G., 4,486,590, Cl. 544-334.000.
Rhoads, Timothy W., 4,486,550, Cl. 521-79.000.
Stelzer, Paul H., 4,486,374, Cl. 264-156.000.
Thomas, Lowell S., 4,486,560, Cl. 524-100.000.
Young, Richard G., 4,486,339, Cl. 252-546.000.

Dow Corning Corporation: *See*—
Benjamin, Kelly L., 4,486,565, Cl. 524-506.000.
Bowman, Sheryl A.; Falender, James R.; Lipowitz, Jonathan; and Saam, John C., 4,486,567, Cl. 524-863.000.
Pape, Peter G.; and Willing, David N., 4,486,336, Cl. 252-321.000.

Dowty Hydraulic Units Limited: *See*—
Lipscombe, Brian R., 4,486,160, Cl. 418-205.000.

Draber, Wilfried: *See*—
Reiser, Wolf; Draber, Wilfried; Buchel, Karl H.; Lurssen, Klaus; Frohberger, Paul-Ernst; and Paul, Volker, 4,486,218, Cl. 71-76.000.

Dresser Industries, Inc.: *See*—
Vasoll, Walter J., 4,485,542, Cl. 29-252.000.
Wilson, James S., 4,485,676, Cl. 73-741.000.

Drewitz, Arthur O.; and Bushell, Donald D. Jack stand. 4,486,004, Cl. 254-2.00B.
Drexelbrook Engineering Company: *See*—
Stern, David M., 4,485,673, Cl. 73-304.00C.
Droeser, Walter. Brush ring for cleansing machines. 4,485,514, Cl. 15-179.000.
Dropczynski, Hartmut, to Jagenberg AG. Device for shaftless winding machines. 4,485,979, Cl. 242-56.00R.
D'Silva, Themistocles D. J., to Union Carbide Corporation. Pesticidal symmetrical bis-sulfenylated-bis carbamate compounds. 4,486,447, Cl. 424-285.000.
Duckworth, James J., to Singer Company, The. Resolver to incremental shaft encoder converter. 4,486,845, Cl. 364-559.000.
Ducreux, Jean: *See*—
Amelot, Bernard; and Ducreux, Jean, 4,485,677, Cl. 73-761.000.
Duffy, James J., to Ford Motor Company. Power steering system with vehicle speed-sensitive flow. 4,485,883, Cl. 180-142.000.
du Fresne, Eugene R., to California Institute of Technology. Vapor degreasing system. 4,486,239, Cl. 134-11.000.
Duke, Jack R., to NCR Corporation. Activity detector usable with a serial data link. 4,486,855, Cl. 364-900.000.
Dulian, Robert J.; Kemp, David M.; Jones, Hartl R.; and Conway, Raymond J., to FMC Corporation. Apparatus for accurately filling beverage cans. 4,485,856, Cl. 141-198.000.
Dumont, Bernard, to Feudor S.A. Disposable gas lighter and device for filling same. 4,486,171, Cl. 431-344.000.
Dunning, Leonard A., to Allied Corporation. Oven and method for heating thermoplastic articles. 4,486,172, Cl. 432-11.000.
Duplat, Gerard; and Leblanc, Jean, to Robert Bosch GmbH. Fuel injection pump. 4,486,154, Cl. 417-487.000.
Du Pont de Nemours, E. I., and Company: *See*—
Deyrup, Edward J., 4,486,564, Cl. 524-308.000.
Farnham, William B., 4,486,589, Cl. 544-321.000.
Patel, Narayan G.; and Wang, Chia-Lin J., 4,486,445, Cl. 424-279.000.
Riley, Clifford, 4,486,097, Cl. 356-410.000.
Sandell, Lionel S., 4,486,317, Cl. 252-8.50A.
Durot, Jean; and Moreau, Ronald, to Degremont. Apparatus for introducing gas into a liquid mass. 4,486,361, Cl. 261-123.000.
Dvoskin, Semen I.: *See*—
Gorbacheva, Irina N.; Sukhova, Ljudmila M.; Kozinda, Zinaida J.; Molokov, Vladislav L.; Antonov, Lev T.; Simonov, Vadim D.; Chertov, Viktor A.; Dvoskin, Semen I.; and Veseneva, Raisa S., 4,486,347, Cl. 534-797.000.
Dydo, Robert J.: *See*—
Reinauer, B. Franklin; and Dydo, Robert J., 4,486,625, Cl. 179-2.00A.
Dyer, Hugh D.: *See*—
Guscott, John K.; and Dyer, Hugh D., 4,486,661, Cl. 250-342.000.
Dynasplint Systems, Inc.: *See*—
Hepburn, George R., 4,485,808, Cl. 128-87.00R.
E. F. Houghton & Co.: *See*—
Warchol, Joseph F., 4,486,246, Cl. 148-18.000.
E & K Corporation: *See*—
Koll, Laurel A., 4,485,824, Cl. 128-756.000.
E.T.A., S.A. Fabriques d'Ebauches: *See*—
Wattenhofer, Jean P., 4,486,847, Cl. 364-705.000.
Earl, Robert A., to Hercules Incorporated. Use of polymeric ethylene oxides in the preparation of glycidyl azide polymer. 4,486,351, Cl. 260-349.000.
Earle, R. L.: *See*—
de Jong, J. N. M.; and Earle, R. L., 4,486,812, Cl. 361-283.000.
Eastman Kodak Company: *See*—
Kresock, John M., 4,486,086, Cl. 354-413.000.
Eaton Corporation: *See*—
Davis, Michael D., 4,486,150, Cl. 417-204.000.
Hastings, Jerome K.; and Bigelow, James H., 4,486,728, Cl. 335-256.000.
Moldovan, Peter K.; and Hohensee, John C., 4,486,733, Cl. 337-101.000.
Olmstead, Richard E., Jr.; and Teeter, Terry E., 4,485,686, Cl. 74-331.000.
Ebata, Yoshihiro; Kose, Saburo; Kinoshita, Makoto; and Ueno, Tsutomu, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Adhesive for and method for adhesion of ceramic articles. 4,486,257, Cl. 156-325.000.
Ebner, Walter, to Messner, Caspar O. H. Process and apparatus for applying relatively hard particles to a circular wire-like form or a wire-like form without longitudinal edges, as well as wire-shaped saw. 4,485,757, Cl. 118-44.000.
Ecer, Gunes M.; Wood, Susan; and Schreurs, Jan J., to Westinghouse Electric Corp. Wear resistant steel articles with carbon, oxygen and nitrogen implanted in the surface thereof. 4,486,247, Cl. 148-31.500.
Eckels, Phillip W.: *See*—
Moore, William G.; Eckels, Phillip W.; and Jugan, Michael R., 4,486,676, Cl. 310-52.000.
Eckle, Otto, to Komet Stahlhalter- und Werkzeugfabrik, Robert Breuning GmbH. Triangular indexable cutting plate for lathe tools. 4,486,127, Cl. 407-114.000.
Eckle, Otto, to Komet Stahlhalter-und Werkzeugfabrik, Robert Breuning, GmbH. Turning tool for machining the ends of shafts, journals, tubes and the like. 4,486,131, Cl. 408-185.000.
Edakubo, Hiroo; and Maeda, Masaya, to Canon Kabushiki Kaisha. Magnetic recording and reproducing device. 4,486,792, Cl. 360-10.200.
Edwards, Arthur J., to Motorola, Inc. Voltage regulator with non-linear excitation control. 4,486,702, Cl. 322-28.000.
Edwards, Douglas C.: *See*—
Fischer, Erhardt; and Edwards, Douglas C., 4,486,562, Cl. 524-156.000.
Edwards, Lawrence K. Mechanical joint. 4,485,967, Cl. 238-226.000.
Edwin Cooper, Inc.: *See*—
Korosec, Philip S., 4,486,324, Cl. 252-49.300.
Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., to Pfizer Inc. Bicyclic benzo fused compounds. 4,486,428, Cl. 424-248.400.
Egli, Hans: *See*—
Byrne, Joe L.; and Egli, Hans, 4,486,147, Cl. 416-213.00R.
Egner, Arne O.: *See*—
Kjohl, Olav; Brekke, Ellen; and Egner, Arne O., 4,486,396, Cl. 423-265.000.
Eguchi, Kiyoshi: *See*—
Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Eguchi, Kiyoshi, 4,486,814, Cl. 361-339.000.
Egusa, Shigenori: *See*—
Hosoi, Fumio; Sasaki, Takashi; Hagiwara, Miyuki; Egusa, Shigenori; and Nanishi, Kiyoshi, 4,486,280, Cl. 204-159.110.
Ehlers, Kenneth W.: *See*—
Leung, Ka-Ngo; and Ehlers, Kenneth W., 4,486,665, Cl. 250-427.000.
Eibofner, Eugen; and Strohmaier, Ernst, to Kaltenbach & Voight GmbH & Co. Arrangement for dispensing of maintenance media to medical, particularly dental, handpieces. 4,486,174, Cl. 433-104.000.
Eichholz, Arthur H., to Central Quality Industries, Inc. Dispenser with quick-release drive screw. 4,485,944, Cl. 222-390.000.
Eichhorn, Uwe: *See*—
Gliemeroth, George; and Eichhorn, Uwe, 4,486,541, Cl. 501-13.000.
Eigner, Erich, to Waagner-Biro Aktiengesellschaft. Anchorage of the liner plates in tumbling mills by means of wedge-shaped elements. 4,485,975, Cl. 241-182.000.
Eisenlohr, Franz, to Sulzer Brothers, Ltd. Terry weaving machine having a deflecting mechanism for warp yarns. 4,485,848, Cl. 139-25.000.
Ekbom, Ragnar; and Garvare, Tore, to ASEA Aktiebolag. Welding by hot isostatic pressing (HIP). 4,485,961, Cl. 228-193.000.
Eklund, Urban: *See*—
Nilsson, Philip, deceased; Eklund, Urban; and Gasslander, Jan-Erik, 4,485,861, Cl. 144-357.000.
Eklund, Vidar: *See*—
Turunen, Olli; Mandell, Leo; Eklund, Vidar; Ekman, Kurt; and Huttunen, Jouko, 4,486,585, Cl. 536-30.000.
Ekman, Kurt: *See*—
Turunen, Olli; Mandell, Leo; Eklund, Vidar; Ekman, Kurt; and Huttunen, Jouko, 4,486,585, Cl. 536-30.000.
Elberel Italiana di Bergamaschi Athos: *See*—
Bergamaschi, Athos, 4,485,554, Cl. 30-50.000.
Eldin, Sameer H., to Ciba-Geigy Corporation. Fibre composite prepregs coated with two different resins. 4,486,494, Cl. 428-260.000.
Eldredge, Charles L.; and Eldredge, John T. Fluid machine. 4,486,145, Cl. 416-82.000.
Eldredge, John T.: *See*—
Eldredge, Charles L.; and Eldredge, John T., 4,486,145, Cl. 416-82.000.
Electric Power Research Institute, Inc.: *See*—
Moore, William G.; Eckels, Phillip W.; and Jugan, Michael R., 4,486,676, Cl. 310-52.000.
Eli Lilly and Company: *See*—
Baltz, Richard H.; Wild, Gene M.; and Seno, Eugene T., 4,486,584, Cl. 536-7.100.
Lacefield, William B.; and Lindstrom, Terry D., 4,486,592, Cl. 546-17.000.
Marshall, Winston S.; Fleisch, Jerome H.; and Cullinan, George J., 4,486,432, Cl. 424-250.000.
Elias, Allan, to Elias, Allan. Carburetor. 4,486,360, Cl. 261-39.00D.
Ellis, Roger D.; Demangeon, Yvon; and Jacques, Alain, to Colgate-Palmolive Company. Liquid all-purpose cleaner. 4,486,329, Cl. 252-117.000.
Elphick, Albert R.: *See*—
Baxter, Martin G.; Elphick, Albert R.; Miller, Alistair A.; and Sawyer, David A., 4,486,354, Cl. 260-465.00E.
Ely, Donald A., to Beloit Corporation. Dryer felt run. 4,485,567, Cl. 34-115.000.
Emanuel, Nikolai M.; Shvedova, Anna A.; Smirnov, Leonid D.; Spirina, Larisa V.; and Katsnelson, Lev A., to Institut Khimicheskoi Fiziki; Institut Glaznykh Boleznei Imeni Gelmgoltsa; and Vsesojuzny Nauchno-Issledovatelsky Khimiko-Farmatsevticheshy Institut. Retinoprotector for treating intraocular hemorrhage, myopic, chorioretinal dystrophies, congenital retinal dystrophies, retinal burns and prevention of injury in lasercoagulation. 4,486,440, Cl. 424-263.000.
Emerson Electric Co.: *See*—
Hoemann, Keith I.; and Barker, Alan R., 4,486,699, Cl. 318-772.000.
Emhart Industries, Inc.: *See*—
Deak, Paul S.; Henderson, Dennis R.; and Voyles, Gerald A., 4,486,809, Cl. 361-272.000.
Emil Bender, Firma: *See*—
Bender, Ulrich, 4,486,517, Cl. 429-149.000.
Emmenegger, Heinz. Solution for electroplating a gold-copper-cadmium alloy. 4,486,275, Cl. 204-44.000.
Emmett, George C., to H. L. & A. G. Balsinger, Inc. Detonation gas delivery unit. 4,485,739, Cl. 102-200.000.

Endo, Hiroyuki: *See*—
Saka, Tsutomu; Kamiyama, Toshihiro; Endo, Hiroyuki; and Ikenoue, Yutaka, 4,485,770, Cl. 123-90.390.
Endo, Kaichi; Katahira, Yoshihiro; Hayashi, Eiichi; and Nakano, Satoshi, to Kureha Kogyo Kabushiki Kaisha. Apparatus for feeding synthetic resin powder to screw extruder. 4,486,100, Cl. 366-76.000.
Endo, Kiyonobu; and Nose, Noriyuki, to Canon Kabushiki Kaisha. Device for measuring incident light. 4,486,096, Cl. 356-225.000.
Endo, Motoki: *See*—
Itoh, Hiroshi; and Endo, Motoki, 4,486,838, Cl. 364-424.100.
Endoh, Eiji: *See*—
Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, 4,486,278, Cl. 204-98.000.
Energy Fibers Int'l Corp.: *See*—
Monaghan, George J., 4,486,211, Cl. 65-1.000.
Engelhard Corporation: *See*—
Cohn, Johann Gunther E.; and Adlhart, Otto J., 4,486,276, Cl. 204-98.000.
Engelhardt, Iris: *See*—
Wiesenberger, Alfred; Kolb, Erich; and Engelhardt, Iris, 4,486,413, Cl. 424-177.000.
Engineering Resources, Inc.: *See*—
Stavropoulos, Constantine N., 4,486,208, Cl. 55-466.000.
Englbrecht, Rupert: *See*—
Handl, Werner; and Englbrecht, Rupert, 4,485,520, Cl. 15-424.000.
Engstrom, Thord I.: *See*—
Arntyr, Oscar S.; and Engstrom, Thord I., 4,486,122, Cl. 405-157.000.
Enoguchi, Yuji; and Masui, Mikio, to Minolta Camera Kabushiki Kaisha. Apparatus for discharging sheets of paper. 4,486,014, Cl. 271-200.000.
Epaztein, Bernard, to Thomson-CSF. Electron gun for convergent beam, and a device, particularly a vidicon tube, equipped with such a gun. 4,486,687, Cl. 315-14.000.
Erb, John C., to Filper Corporation. Pre-slitter blade in a peach pitter and method. 4,486,454, Cl. 426-485.000.
Ercon Corporation: *See*—
Thompson, Wayne L.; and Bailey, Bert E., 4,486,121, Cl. 405-17.000.
Erdman, Maya E.: *See*—
Shutov, Gennady M.; Erdman, Maya E.; Boltovsky, Valery S.; Solomakha, Adel I.; Nosevich, Alexandr F.; Pukhalsky, Miroslav E.; Kirichenko, Vladimir A.; and Derbyshkin, Valentin V., 4,486,475, Cl. 427-351.000.
Erdmann, Jurgen; and Kuhn, Fritz, to Erwin Sick GmbH Optik-Elektronik. Pulsed light barrier apparatus for direct connection to an a.c. supply. 4,486,656, Cl. 250-214.00R.
Eriksson, Egon A. L., to Ursviksens Mekaniska Verkstads Aktiebolag. Arrangement for attaching a knife blade in a power shears. 4,485,714, Cl. 83-698.000.
Erlandsson, Kjell I., to Kelley Company, Inc. Energy recovery system for an incinerator. 4,485,746, Cl. 110-234.000.
Ertl, Franz; Fleck, Adolf; and Jelinek, Nikolaus, to Afga-Gevaert Aktiengesellschaft. Drying arrangement for photosensitive articles. 4,485,565, Cl. 34-4.000.
Erwin Kampf GmbH & Co. Maschinenfabrik: *See*—
Berzbach, Dietmar, 4,485,983, Cl. 242-65.000.
Erwin Sick GmbH Optik-Elektronik: *See*—
Erdmann, Jurgen; and Kuhn, Fritz, 4,486,656, Cl. 250-214.00R.
Erwin, Wayne F., to Ashland Oil, Inc. Flushing system for a meter-mix-dispensing device. 4,485,840, Cl. 137-240.000.
ESAB, North America, Inc.: *See*—
Brouwer, Frans, 4,486,654, Cl. 250-202.000.
Esayan, Mariana; Celerier, Gerard; and Bonhomme, Nicolas M., to Framatome. Method and apparatus for cooling the primary circuit of a pressurized water nuclear reactor. 4,486,383, Cl. 376-299.000.
Eshraghi, Reza; Pesa, Frederick A.; and Desmond, Mike J., to Standard Oil Company, The. Group IIIB metallophosphates. 4,486,397, Cl. 423-306.000.
Eskelinen, Kalevi, to Vihta-Auto ja Kone Oy. Washing machine for a waste container. 4,485,513, Cl. 15-56.000.
Esselte Pendaflex Corporation: *See*—
Schrotz, Kurt; and Koch, Ulf, 4,486,258, Cl. 156-384.000.
Essex Group, Inc.: *See*—
O'Connor, James A., 4,485,978, Cl. 242-25.00R.
Estreicher, Herbert; and Soloway, Samuel B., to Shell Oil Company. Insecticidal N-substituted-2-(halonitromethylene) tetrahydro-2H-1,3-thiazines. 4,486,427, Cl. 424-246.000.
Etablissement Public de Diffusion dit "Telediffusion de France" : *See*—
Marti, Bernard, 4,486,779, Cl. 358-147.000.
Ethyl Corporation: *See*—
Chung, James Y. J.; Jones, Jesse D.; and Li, Hsueh M., 4,486,561, Cl. 524-107.000.
Evans, Allen L.: *See*—
Chan, Yiu-Fai; and Evans, Allen L., 4,486,670, Cl. 307-264.000.
Evans, Morris L.: *See*—
Jagisch, Frank C.; and Evans, Morris L., 4,486,563, Cl. 524-158.000.
Everse, Johannes: *See*—
Kiel, Johnathan L.; and Everse, Johannes, 4,486,408, Cl. 424-94.000.
Evert, Carl F., Jr. Board with movable game pieces and orientable barrier sections. 4,486,017, Cl. 273-153.00S.
Ewing, Peter D., to National Set Screw Corporation. Tool holder for a mining tool bit and method for making same. 4,485,655, Cl. 72-68.000.
Ex-Cell-O Corporation: *See*—
Melnyk, William; and Fries, Robert P., 4,485,867, Cl. 165-173.000.
Ridley, Robert R.; and Fitzpatrick, Paul, 4,485,657, Cl. 72-88.000.
Extracorporeal Medical Specialties, Inc.: *See*—
Troutner, Vernon H.; and Morrow, Richard A., 4,486,189, Cl. 604-5.000.
Exxon Research & Engineering Co.: *See*—
Genack, Azriel Z., 4,486,885, Cl. 372-26.000.
Gutierrez, Antonio; Brownawell, Darrell W.; and Brois, Stanley J., 4,486,326, Cl. 252-49.700.
Jagisch, Frank C.; and Evans, Morris L., 4,486,563, Cl. 524-158.000.
Langer, Arthur W., Jr., 4,486,615, Cl. 585-523.000.
Michaelson, Robert C.; Austin, Richard G.; and White, Donald A., 4,486,613, Cl. 568-860.000.
Newman, Neil F.; and Kowalski, Ronald C., 4,486,575, Cl. 525-356.000.
Worley, Arthur C.; and Becht, Charles, IV, 4,485,766, Cl. 122-510.000.
F. L. Smidth & Co.: *See*—
Lass, Finn, 4,485,974, Cl. 241-30.000.
Fabbri, Cesare; Bellitto, Gianfranco; La Mantia, Giuseppe; and Failla, Biagio, to Snamprogetti, S.p.A. Recovering condensables from a hydrocarbon gaseous stream. 4,486,209, Cl. 62-18.000.
Fag Kugelfischer Georg Schafer & Co.: *See*—
Schmitt, Gunther; Oppl, Gunther; Patel, Kirit; and Bieber, Theo, 4,485,617, Cl. 57-340.000.
Faggin, Federico: *See*—
Shima, Masatoshi; Faggin, Federico; and Ungermann, Ralph K., 4,486,827, Cl. 364-200.000.
Failla, Biagio: *See*—
Fabbri, Cesare; Bellitto, Gianfranco; La Mantia, Giuseppe; and Failla, Biagio, 4,486,209, Cl. 62-18.000.
Falender, James R.: *See*—
Bowman, Sheryl A.; Falender, James R.; Lipowitz, Jonathan; and Saam, John C., 4,486,567, Cl. 524-863.000.
Falk, David O., to Marathon Oil Company. Process for selectively plugging permeable zones in a subterranean formation. 4,485,875, Cl. 166-295.000.
Fanuele, Frank, to Mechanical Technology Incorporated. Rotor diagnostic and balancing system. 4,485,678, Cl. 73-660.000.
Farcasiu, Malvina: *See*—
Bowes, Emmerson; Brandes, Susan D.; Farcasiu, Malvina; and Scott, Eric J. Y., 4,486,298, Cl. 208-253.000.
Farila Lattblock AB: *See*—
Forslund, Lennart, 4,485,546, Cl. 29-451.000.
Farkas, Endre: *See*—
Adonyi, Ivan; Farkas, Endre; Hegedus, Gyula; Kormendy, Attila; Mogyorosi, Istvanne ; Molnar, Geza; Sass, Szilard; Scholler, Laszlo ; Takacs, Lajos; and Vitez, Gyorgy, 4,486,825, Cl. 364-200.000.
Farley, Maryette K. Compartmentalized file folder apparatus. 4,485,962, Cl. 299-1.50R.
Farnham, William B., to Du Pont de Nemours, E. I., and Company. Herbicidal N-(heterocyclicaminocarbonyl)-ortho-haloalkylbenzenesulfonamides. 4,486,589, Cl. 544-321.000.
Farrish, Dean T.: *See*—
Altshuler, John H.; and Farrish, Dean T., 4,486,188, Cl. 604-4.000.
Fast, Jacob J. Price channel flag clip. 4,485,575, Cl. 40-11.00R.
Faust, Raimund J.: *See*—
Jeffers, William; Seeley, Douglas; Faust, Raimund J.; and Liu, Shuchen, 4,486,529, Cl. 430-300.000.
Fawdry, John A. Self-levelling vehicle support arrangement. 4,486,006, Cl. 254-88.000.
Fazio, Michael J., to Dow Chemical Company, The. Preparation of anionic and cationic polymers from 2-oxazolines. 4,486,554, Cl. 525-279.000.
Feenstra, Robijn: *See*—
Kamp, Anthony W.; and Feenstra, Robijn, 4,485,879, Cl. 175-61.000.
Feger, Herbert; Griesbach, Rolf; and Geue, Franz-Hubert, to Maschinenfabrik Walter Scheele GmbH & Co. KG. Concrete pump with buttressed distribution pipe. 4,486,156, Cl. 417-517.000.
Feigt, Ingmar: *See*—
Risch, Lothar; Feigt, Ingmar; and Tielert, Reinhard, 4,486,778, Cl. 358-111.000.
Feirman, Barbara M.: *See*—
Desmond, John D.; and Feirman, Barbara M., 4,485,922, Cl. 206-485.000.
Feldmuhle Aktiengesellschaft: *See*—
Leimer, Gerhard; and Gugel, Ernst, 4,486,543, Cl. 501-88.000.
Schumacher, Rudolf, 4,486,507, Cl. 428-476.100.
Felisa, Norbert A.; and Lile, Tim W., to International Business Machines Corporation. Self-cleaning magnetic head air bearing slider and method. 4,486,798, Cl. 360-103.000.
Ferag AG: *See*—
Rhunke, Rolf, 4,486,011, Cl. 270-55.000.
Ferranti plc: *See*—
Coulter, Albert G., 4,486,081, Cl. 353-27.00R.
Ferrara, James. Therapeutic device for administering medicaments through the skin. 4,486,194, Cl. 604-897.000.
Fetchko, John E. Device for use by quadri-plegics to operate a computer, video game or the like by the use of movements of the jaw and eyebrows. 4,486,630, Cl. 200-52.00R.
Feudor S.A.: *See*—
Dumont, Bernard, 4,486,171, Cl. 431-344.000.
Feuerbaum, Hans-Peter, to Siemens Aktiengesellschaft. Electron beam testing device for stroboscopic measurement of high-frequency, periodic events. 4,486,660, Cl. 250-310.000.

F'Geppert, Erwin, to United States of America, Army. Hollow three dimensional air-inflatable structures. 4,486,479, Cl. 428-35.000.
Fiat-Allis Europe S.p.A.: *See*—
Pescarmona, Roberto D., 4,486,141, Cl. 414-697.000.
Fichtel & Sachs AG: *See*—
Grundei, Manfred, 4,485,899, Cl. 188-277.000.
Fickert, Richard A. Receptacle for administering insulin. 4,485,925, Cl. 206-534.000.
Filper Corporation: *See*—
Erb, John C., 4,486,454, Cl. 426-485.000.
Finnan, Jeffrey L.: *See*—
Schmidt, Douglass N.; Finnan, Jeffrey L.; and Lisa, Rudolph E., 4,486,435, Cl. 424-252.000.
Finnish Chemicals Oy: *See*—
Kuusinen, Osmo; Rantanen, Mikko; Rintanen, Olavi; Pajunen, Reijo; Oittinen, Pekka; and Valtanen, Kalevi, 4,486,647, Cl. 219-137.0WM.
Fire Task Force Innovations, Inc.: *See*—
McMillan, Stewart G.; Steingass, Robert W.; and McMillan, Clyde H., 4,485,877, Cl. 169-48.000.
Fischer, Erhardt; and Edwards, Douglas C., to Polysar Limited. Process for making vulcanized carbon black-reinforced bromobutyl rubber films. 4,486,562, Cl. 524-156.000.
Fisher Controls International, Inc.: *See*—
Shollenbarger, David W., 4,485,727, Cl. 92-13.200.
Fisher, Joseph D., to Armour Pharmaceutical Company. Heat defibrinogenation of AHF preparation. 4,486,410, Cl. 424-101.000.
Fisher, Leo; and Weiser, Atilla, to Teledyne Industries, Inc. Dental appliance. 4,486,175, Cl. 433-104.000.
Fisheries Resource Development Limited: *See*—
Stachowiak, Weis A., 4,485,527, Cl. 17-70.000.
Fitzpatrick, Paul: *See*—
Ridley, Robert R.; and Fitzpatrick, Paul, 4,485,657, Cl. 72-88.000.
Flair-Emsco Corporation: *See*—
Carrell, Edward A.; and Spivey, David H., 4,485,864, Cl. 165-11.00R.
Flakt Aktiebolag: *See*—
Gustafsson, Alf G.; and Matts, Sigvard, 4,486,704, Cl. 323-246.000.
Flamboe, Donald R., Jr.; and VanderKooi, David L., to Trendway Corporation. Wall panel positive alignment device. 4,485,602, Cl. 52-239.000.
Flanders, James R.; Newton, Robert A.; and Berrill, William H., to USM Corporation. Machines for lasting heel seat portions of shoes. 4,485,512, Cl. 12-12.500.
Fleck, Adolf: *See*—
Ertl, Franz; Fleck, Adolf; and Jelinek, Nikolaus, 4,485,565, Cl. 34-4.000.
Fleisch, Jerome H.: *See*—
Marshall, Winston S.; Fleisch, Jerome H.; and Callinan, George J., 4,486,432, Cl. 424-250.000.
Fleming, Dennis J.: *See*—
Marcus, Konrad H.; Flowerday, Carl W.; and Fleming, Dennis J., 4,486,819, Cl. 362-142.000.
Flores, Oscar: *See*—
Flores, Rodolfo, Jr.; and Flores, Oscar, 4,485,543, Cl. 29-281.100.
Flores, Rodolfo, Jr.; and Flores, Oscar. Wallboard positioning apparatus. 4,485,543, Cl. 29-281.100.
Flower, Robert W., to Johns Hopkins University, The. Method and apparatus for the continuous monitoring of hemoglobin saturation in the blood of premature infants. 4,485,820, Cl. 128-633.000.
Flowerday, Carl W.: *See*—
Marcus, Konrad H.; Flowerday, Carl W.; and Fleming, Dennis J., 4,486,819, Cl. 362-142.000.
FMC Corporation: *See*—
Champlin, Keith S.; Preimesberger, Ernest C.; Meyer, Larry A.; and Miller, George W., 4,486,852, Cl. 364-900.000.
Dulian, Robert J.; Kemp, David M.; Jones, Hartl R.; and Conway, Raymond J., 4,485,856, Cl. 141-198.000.
Riess, Ronald L.; and Ames, Thomas J., 4,486,002, Cl. 251-214.000.
Van Saun, William A.; and Roush, David M., 4,486,588, Cl. 544-172.000.
Fodor, Istvan: *See*—
Brendel nee Hajnoczki, Marta; Gulyas, Imre; Gyoker, Istvan; Zsupan, Kalman; Csorvassy, Istvan; Salamon, Zoltan; Somogyi, Gabor; Szentkiralyi, Istvan; Timar, Tibor; Biro nee Czapary, Eva; Fodor, Istvan; and Repasi, Janos, 4,486,359, Cl. 260-502.50F.
Fohl, Artur, to REPA Feinstanzwerk GmbH. Belt strap-clamping device for safety belts in motor vehicles. 4,485,985, Cl. 242-107.200.
Foley, William L.: *See*—
Ghose, Rabindra N.; Sauter, Walter A.; and Foley, William L., 4,486,757, Cl. 343-417.000.
Fontan, Nestor R. Apparatus for emergency evacuation of people from tall buildings. 4,485,893, Cl. 182-234.000.
Ford Aerospace & Communications Corporation: *See*—
Boss, Harold O., 4,485,740, Cl. 102-293.000.
Ford Motor Company: *See*—
Bracken, William J.; and Sakioka, Johnny K., Jr., 4,485,898, Cl. 188-250.00B.
Caverly, John C., 4,485,545, Cl. 29-447.000.
Duffy, James J., 4,485,883, Cl. 180-142.000.
Holubka, Joseph W., 4,486,571, Cl. 525-110.000.
Kordomenos, Panagiotis I.; and Kurple, Kenneth R., 4,486,555, Cl. 523-400.000.
Kordomenos, Panagiotis I.; and Kurple, Kenneth R., 4,486,556, Cl. 523-400.000.
Forlani, Riccardo: *See*—
Cestari, Bruno; Forlani, Riccardo; and Gontero, Piero, 4,486,091, Cl. 355-3.0TR.
Forslund, Lennart, to Farila Lattblock AB. Method and apparatus for packing insulation material in hollow blocks. 4,485,546, Cl. 29-451.000.
Forster, Hilmar; Vahldiek, Ernst; and Arbab, Dildar, to Scharfenbergkupplung GmbH. Central buffer coupling for rail vehicles. 4,485,931, Cl. 213-4.000.
Forster, SiEX. Process and arrangement for the formation of an ignitable mixture from liquid fuel and combustion air. 4,486,362, Cl. 261-138.000.
Fory, Werner; Martin, Henry; and Pissiotas, Georg, to Ciba-Geigy Corporation. Oxime derivatives for protecting plant crops. 4,486,224, Cl. 71-105.000.
Foster Cathead Company: *See*—
Heilhecker, Joe K.; Rodgers, James D.; and Gaare, Steven C., 4,485,697, Cl. 81-57.200.
Foster, Lawrence H., Jr., to Gunther Pacific Limited of Hong Kong. Weight loss device and method. 4,485,805, Cl. 128-1.00R.
Foster, Robert D. Method making a dispensing bag. 4,486,187, Cl. 493-194.000.
Foster, Terence J. C., to Otter Controls Limited. Latch for a snap-action switch. 4,486,735, Cl. 337-348.000.
Foster, Terry L.: *See*—
Brewer, John H.; and Foster, Terry L., 4,486,540, Cl. 436-513.000.
Fournier, Alain M.; and Kennedy, John F., to Societe de Construction des Avions Hurel-Dubois. Thrust reversal device for air-craft turbojets. 4,485,970, Cl. 239-265.290.
Fournier, Paul R. Cross-field diode sputtering target assembly. 4,486,287, Cl. 204-192.00R.
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Fox, Edward J.: *See*—
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Fozard, John R.; and Gittos, Maurice W., to Merrell Toraude Et Compagnie. Pseudotropyl halogeno-benzoates and their use in migraine treatment. 4,486,441, Cl. 424-265.000.
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Hemmerich, Johann; Kupsehus, Peter; and Fraenkle, Helmut, 4,485,866, Cl. 165-90.000.
Fraleux, Jean; and Ploix, Jean L., to Thomson-CSF. Bipolar element having a non-linear conductivity characteristic, and commutating device incorporating the same. 4,486,767, Cl. 357-23.000.
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Anglaret, Gilbert; Wolff, Rene ; and Audibert, Alain, 4,485,994, Cl. 248-65.000.
Easyan, Mariana; Celerier, Gerard; and Boshomme, Nicolas M., 4,486,383, Cl. 376-299.000.
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Franaszek, Peter A.; and Widmer, Albert X., to International Business Machines Corporation. Byte oriented DC balanced (0,4) 8B/10B partitioned block transmission code. 4,486,739, Cl. 340-347.0DD.
Frank, Vlastimil, to International Business Machines Corporation. Variable drive pin projection mechanism for a belt sprocket drive wheel. 4,485,914, Cl. 198-834.000.
Franks, Bobby L. Loom beam let off. 4,485,849, Cl. 139-107.000.
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Freber, Elmer C., to Marquette Tool and Die Company. Burner for cooking grills. 4,485,972, Cl. 239-553.300.
Freeman, Albert L.; Taylor, Brian H.; and Smith, Roy E. R., to International Standard Electric Corporation. Electromagnetic relay. 4,486,727, Cl. 335-106.000.
Freidinger, Roger, to Merck & Co., Inc. Cyclic hexapeptide somatostatin analogs. 4,486,415, Cl. 424-177.000.
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Frese, Georg; and Siebold, Horst, to Siemens Aktiengesellschaft. Gradient field coil system for nuclear spin tomography. 4,486,711, Cl. 324-319.000.
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Schindler, Johannes G.; and Schindler nee Kardosova, Maria, 4,486,291, Cl. 204-415.000.
Freyssinet International (STUP): *See*—
Amelot, Bernard; and Ducreux, Jean, 4,485,677, Cl. 73-761.000.
Friebe, Walter-Gunar; Kampe, Wolfgang; Roesch nee Apostolides, Androniki; and Schaumann, Wolfgang, to Boehringer Mannheim GmbH. Anti-allergy bicyclic phenol ethers. 4,486,442, Cl. 424-267.000.
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Schulte, Willi, 4,486,178, Cl. 433-173.000.
Fries, Robert P.: *See*—
Melnyk, William; and Fries, Robert P., 4,485,867, Cl. 165-173.000.
Friess, Philip A. Emergency escape system. 4,485,891, Cl. 182-9.000.

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Frohberger, Paul-Ernst: *See*—
Reiser, Wolf; Draber, Wilfried; Buchel, Karl H.; Lurssen, Klaus; Frohberger, Paul-Ernst; and Paul, Volker, 4,486,218, Cl. 71-76.000.
Fromson, Robert E.; Skutch, Maria E.; Nunamaker, Charles S.; and Scheda, Francis A., to Westinghouse Electric Corp. Apparatus and method for making a laminated core. 4,486,279, Cl. 204-129.500.
Frushtick, Leonard, to Leonard Automatics, Inc. Waist expander for trouser finisher. 4,485,572, Cl. 38-42.000.
Fuji Electric Company, Ltd.: *See*—
Yamamura, Tatsuo, 4,486,777, Cl. 358-106.000.
Fuji Jokogyo Kabushiki Kaisha: *See*—
Takano, Toshio, 4,485,886, Cl. 180-247.000.
Fuji Koeki Kabushiki Kaisha: *See*—
Takematsu, Yoshiyuki, 4,486,690, Cl. 315-151.000.
Fuji Kogyo Co., Ltd.: *See*—
Ohmura, Ryuichi, 4,485,580, Cl. 43-22.000.
Fuji Kuuki Kabushiki Kaisha: *See*—
Minamiyama, Toshimasa; and Arahori, Haruo, 4,485,595, Cl. 51-165.920.
Fuji Photo Film Co., Ltd.: *See*—
Dezawa, Shin-ichiro; Akashi, Goro; and Kitamoto, Tatsuji, 4,486,496, Cl. 428-328.000.
Morigaki, Masakazu; and Tsubota, Motohiko, 4,486,528, Cl. 430-218.000.
Naruo, Kyoichi; Yamamoto, Nobuyuki; and Okita, Tsutomu, 4,486,500, Cl. 428-336.000.
Sakurai, Kiyoshi; Ishi, Akira; and Abe, Yoshihiro, 4,486,320, Cl. 252-12.600.
Fuji Xerox Co., Ltd.: *See*—
Katsoka, Hiroyuki, 4,486,655, Cl. 250-211.00R.
Fujihira, Masamichi, to Hitachi, Ltd. Method of electrochemical measurement utilizing photochemical reaction and apparatus therefor. 4,486,272, Cl. 204-1.00T.
Fujii, Masahiko; and Hirosawa, Yoshiaki, to New Nippon Electric Co., Ltd.; and Honda Giken Kogyo Kabushiki Kaisha. An engine ignition control circuit having a failsafe for a crank angle sensor. 4,485,784, Cl. 123-416.000.
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Fujimoto, Misao; Ishii, Shoso; Yada, Yoshikuni; and Imazu, Shigeki, to Toyo Kogyo Co., Ltd. Control means for internal combustion engines. 4,485,625, Cl. 60-601.000.
Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; Funaki, Hirozo; Seimaya, Ryubun; Yamada, Yutaka; Tomoso, Makoto; and Tarumi, Noriyoshi, to Konishiroku Photo Industry Co., Ltd. Toner for developing electrostatic latent images comprising a resin having specified molecular weight parameters. 4,486,524, Cl. 430-109.000.
Fujita, Takeshi: *See*—
Kawamatsu, Yutaka; Fujita, Takeshi; and Yamamoto, Yujiro, 4,486,594, Cl. 548-183.000.
Fujita, Tamio; and Nagoshi, Fumiya, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Polyvinyl chloride composition. 4,486,569, Cl. 525-80.000.
Fujitsu Fanuc Limited: *See*—
Nozawa, Ryoichiro; and Kiya, Nobuyuki, 4,486,741, Cl. 340-365.00R.
Fujitsu Limited: *See*—
Ito, Takashi; and Kato, Ichiro, 4,486,461, Cl. 427-38.000.
Takagi, Yasumasa; Sasaki, Tomohico; Matsumura, Tadanobu; and Gobuichi, Tadashi, 4,486,058, Cl. 339-14.00R.
Takenae, Yoshihiro; and Nakano, Tomio, 4,486,860, Cl. 365-222.000.
Yanase, Takeyasu; and Amatsu, Masashi, 4,486,858, Cl. 365-39.000.
Fujiwara, Kazuo; Tomari, Haruo; Aritomi, Osamu; and Sato, Nobuhiro, to Kabushiki Kaisha Kobe Seiko Sho. Dual phase stainless steel suitable for use in sour wells. 4,486,231, Cl. 75-125.000.
Fukami, Tatsuo: *See*—
Kudo, Michio; Fukami, Tatsuo; and Hayashibe, Rinpei, 4,486,742, Cl. 340-344.00E.
Fukase, Hiroshi: *See*—
Horii, Satoshi; Kameda, Yukihiko; and Fukase, Hiroshi, 4,486,602, Cl. 564-360.000.
Fukaya, Kazuo: *See*—
Sugimoto, Hiroyuki; Fukaya, Kazuo; and Koguchi, Yoji, 4,486,545, Cl. 501-123.000.
Fukuchi, Kiyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Rear suspension system for two-wheeled vehicles. 4,485,885, Cl. 180-227.000.
Fukuda, Tatemi: *See*—
Morita, Takayuki; Muramatsu, Shigeru; and Fukuda, Tatemi, 4,485,616, Cl. 57-261.000.
Fukumoto, Ryutaro: *See*—
Yoshida, Yukio; Tanaka, Akira; Fukumoto, Ryutaro; Akimoto, Ryosaku; Tanaka, Shigetoshi; and Ito, Nobuaki, 4,485,863, Cl. 165-42.000.
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Fukushima, Yoshiaki: *See*—
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Fuller, Brian L. Rollable airfoil. 4,485,991, Cl. 244-49.000.
Fuller, Kevin S. Rotatable hand tool with directional drive control. 4,485,699, Cl. 81-59.100.
Fuller, Robert D., to Slide Shooters, Inc. Adjustable automatic tray loading and indexing mechanism. 4,485,611, Cl. 53-501.000.
Fuller, Robert L., Jr.: *See*—
Baker, Irwin G.; Fuller, Robert L., Jr.; and Proff, Dwayne E., 4,486,128, Cl. 408-3.000.
Fun World, a division of Easter Unlimited, Inc.: *See*—
Geller, Stanley, 4,485,921, Cl. 206-471.000.
Funada, Fumiaki; Matsuura, Masataka; and Wada, Tomio, to Sharp Kabushiki Kaisha. Liquid crystal display/record cell. 4,486,760, Cl. 346-107.00R.
Funaki, Hirozo: *See*—
Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; Funaki, Hirozo; Seimaya, Ryubun; Yamada, Yutaka; Tomono, Makoto; and Tarumi, Noriyoshi, 4,486,524, Cl. 430-109.000.
Funato, Kenichi: *See*—
Okumoto, Tadaoki; Sugimoto, Masatoshi; Kawazoe, Takashi; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Funato, Kenichi, 4,486,480, Cl. 428-36.000.
Funazaki, Tadashi: *See*—
Kishino, Takao; Funazaki, Tadashi; and Yamaguchi, Toshihiro, 4,486,749, Cl. 340-772.000.
Furche, Marion: *See*—
Muth, Peter; Hartung, Wolfgang; Krake, Friedhelm; and Furche, Marion, 4,485,688, Cl. 74-473.00R.
Furmanski, Walery; and Schmid, Herman, to Aktiebolaget Bofors. Rapid de-icing system. 4,485,718, Cl. 89-1.140.
Furumura, Kyozaburo; Sugi, Hiromi; Murakami, Yasuo; and Asai, Hiromitsu, to Nippon Seiko K.K. Sealing and bearing means by use of ferrofluid. 4,486,026, Cl. 277-80.000.
Furutsu, Akira, to Japan Bano'k Co., Ltd.; and Ben Clements & Sons, Inc. Tag assembly feeding mechanism. 4,485,954, Cl. 227-67.000.
Furuya, Katsuhiko: *See*—
Harada, Shinichi; Furuya, Katsuhiko; and Tamada, Kazukiyo, 4,485,812, Cl. 128-303.150.
Fushiki, Yasuo; Oizumi, Masayuki; Abe, Masaharu; and Watanabe, Makoto, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Flame-retarded copper clad laminates. 4,486,505, Cl. 428-416.000.
Fushikida, Katsunobu, to Nippon Electric Co., Ltd. System for extraction of pole parameter values. 4,486,899, Cl. 381-36.000.
Fusion Plastics Ltd.: *See*—
Bridgstock, Eric; Kenworthy, David M. A.; Glaves, Brian; and Bilton, David A., 4,486,650, Cl. 219-544.000.
Futaba Denshi Kogyo Kabushiki Kaisha: *See*—
Kishino, Takao; Funazaki, Tadashi; and Yamaguchi, Toshihiro, 4,486,749, Cl. 340-772.000.
Morimoto, Kiyoshi, 4,486,499, Cl. 428-336.000.
G & R Instrument Company, Inc.: *See*—
O'Connor, George L.; Oswald, Ralph E.; and Heppding, Marc A., 4,485,822, Cl. 128-719.000.
GA Technologies Inc.: *See*—
Kaae, James L.; Gulden, Terry D.; and Yang, Ling, 4,486,473, Cl. 427-249.000.
Gaare, Steven C.: *See*—
Heilhecker, Joe K.; Rodgers, James D.; and Gaare, Steven C., 4,485,697, Cl. 81-57.200.
Gafford, Alexander T.; and Murray, David L., to Allis-Chalmers Corp. Planter seed hopper with optional chemical compartments. 4,485,939, Cl. 222-129.000.
Gale, Robert M.: *See*—
Shaw, Jane; and Gale, Robert M., 4,486,193, Cl. 604-897.000.
Gallagher, John B., to Loew's Theatres, Inc. Control circuit for air conditioning systems. 4,485,632, Cl. 62-179.000.
Gallman, Thomas W.: *See*—
Abraham, Dennis G.; and Gallman, Thomas W., 4,486,784, Cl. 358-261.000.
Gang-Nail Systems, Inc.: *See*—
Gottlieb, Robert, 4,485,606, Cl. 52-694.000.
Rionda, Carlos; and Gottlieb, Robert, 4,486,115, Cl. 403-283.000.
Garcia, Daniel P.: *See*—
Pellerin, Norvin L.; Katzfey, James M.; and Garcia, Daniel P., 4,485,509, Cl. 8-158.000.
Gardner, Charles C., to Higa, Lawrence H.; and Gardner, Charles C., a part interest. Instrument attachments for radius working machines. 4,485,704, Cl. 82-34.00A.
Garg, Diwakar, to Air Products and Chemicals, Inc. Catalytic coal hydroliquefaction process. 4,486,293, Cl. 208-10.000.
Garrett Corporation, The: *See*—
Byrne, Joe L.; and Egli, Hans, 4,486,147, Cl. 416-213.00R.
Garside, David W., to Norton Motors (1978) Limited. Rotor for a rotary engine. 4,486,159, Cl. 418-61.00A.
Garvare, Tore: *See*—
Ekbom, Ragnar; and Garvare, Tore, 4,485,961, Cl. 228-193.000.
Gaslander, Jan-Erik: *See*—
Nilsson, Philip, deceased; Eklund, Urban; and Gaslander, Jan-Erik, 4,485,861, Cl. 144-357.000.
Gates Rubber Company, The: *See*—
Posivista, Richard W.; Kemper, Dennis; and Westhoff, William L., 4,486,183, Cl. 474-94.000.
Gatewood, Sidney U., to Borg-Warner Corporation. Vibration damper with variable rate springs and damping friction. 4,485,908, Cl. 192-106.200.
Gatewood, Sidney U., to Borg-Warner Corporation. Multiple stage vibration damper. 4,485,909, Cl. 192-106.200.

Gaucher, Antoine: *See*—
Aubert, Andre ; Chevallier, Jacques; Gaucher, Antoine; and Terrat, Jean-Paul, 4,486,285, Cl. 204-192.00C.
Gaul, James M.; and Nguyen, Tinh, to Atlantic Richfield Company. Organic polyisocyanate-liquid aromatic epoxide-lignin adhesive binder compositions. 4,486,557, Cl. 523-446.000.
Gaunt, Wilmer B., Jr.; and Giammusso, Michael R., to AT&T Bell Laboratories. Broadband transmission on limited bandwidth digital line. 4,486,876, Cl. 370-7.000.
Gauthier, Pierre, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Method and apparatus for gas liquefaction. 4,486,210, Cl. 62-23.000.
Gazzarrini, Vinicio, to Solis S.r.l. Control device for controlling the application of a gusset to a tubular article. 4,485,749, Cl. 112-121.120.
Gebhart, Steven A.; and Parks, Randolph, to Xerox Corporation. Controlled frictional feeding of computer forms web. 4,485,949, Cl. 226-2.000.
Geller, Stanley, to Fun World, a division of Easter Unlimited, Inc. Package for a mask. 4,485,921, Cl. 206-471.000.
Genack, Azriel Z., to Exxon Research & Engineering Co. Generation of short amplified pulses of light using an absorbing medium. 4,486,885, Cl. 372-26.000.
Genba, Yasushi: *See*—
Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Eguchi, Kiyoshi, 4,486,814, Cl. 361-339.000.
General Electric Ceramics, Inc.: *See*—
Sadlo, James L.; and Musil, Gary D., 4,486,738, Cl. 338-320.000.
General Electric Company: *See*—
Chung, Rack H., 4,486,504, Cl. 428-412.000.
Gonia, Richard J., 4,486,253, Cl. 156-51.000.
Jones, Donald W., 4,486,679, Cl. 310-218.000.
Kenworthy, Milton J., 4,485,630, Cl. 60-757.000.
Leach, John G., 4,486,734, Cl. 337-162.000.
Reed, Bradley O., 4,485,691, Cl. 74-687.000.
Vaughn, Howard A., Jr., 4,486,503, Cl. 428-412.000.
General Motors Corporation: *See*—
Boyer, James A., 4,485,796, Cl. 123-617.000.
Cataldo, Roy S., 4,486,185, Cl. 474-201.000.
Deckard, John I.; and Straub, Robert D., 4,485,969, Cl. 239-88.000.
Holler, J. Ronald; and Wojciechowski, Francis E., 4,486,031, Cl. 280-802.000.
Koivunen, Erkki A., 4,485,903, Cl. 192-86.000.
Lutfy, Joseph P.; Grabowski, Thaddeus J.; and Arnold, Robert G., 4,486,273, Cl. 204-15.000.
Matthews, William S., 4,485,647, Cl. 70-165.000.
Muth, Peter; Hartung, Wolfgang; Krake, Friedhelm; and Furche, Marion, 4,485,688, Cl. 74-473.00R.
Poe, David T., 4,486,516, Cl. 429-82.000.
Roush, Roy W.; Rassaian, Mostafa; and Smith, Karl R., 4,485,743, Cl. 105-176.000.
Seifert, Raymond C.; and Miller, Frank J., Jr., 4,486,063, Cl. 339-97.00C.
Woodward, Gary K., 4,486,770, Cl. 357-46.000.
Yu, Mason K., 4,485,888, Cl. 180-297.000.
George, Paul J., to B. F. Goodrich Company, The. Films of hydrophilic interpolymers of neutralized acrylic acid, hydroxyalkyl methacrylate or dialkylaminoalkyl (meth)acrylate and optionally a cross-linking agent. 4,486,489, Cl. 428-220.000.
Gerber Garment Technology, Inc.: *See*—
Gerber, Heinz J., 4,485,712, Cl. 83-451.000.
Gerber, Heinz J., to Gerber Garment Technology, Inc. Method and apparatus for holding sheet material in a sectioned vacuum bed. 4,485,712, Cl. 83-451.000.
Gertsch, Peter; Imhof, Robert; and Zahnd, Andreas, to Maschinenfabrik WIFAG. Metering blade for zonally metering a liquid film. 4,485,738, Cl. 101-365.000.
Geshuri Laboratories, Ltd.: *See*—
Bakel, Izhak, 4,486,356, Cl. 260-501.120.
Geue, Franz-Hubert: *See*—
Feger, Herbert; Griesbach, Rolf; and Geue, Franz-Hubert, 4,486,156, Cl. 417-517.000.
Gewerkschaft Eisenhutte Westfalia: *See*—
Demircan, Bayramadi; and Kussel, Willy, 4,485,724, Cl. 91-29.000.
Ghigliotti, Giovanni; and Lancella, Attilio, to Connei S.p.A. Pin member for an electrical connector and a method for making same. 4,486,068, Cl. 339-252.00P.
Ghose, Rabindra N.; Sauter, Walter A.; and Foley, William L., to American Nucleonics Corp. Automatic direction finder. 4,486,757, Cl. 343-417.000.
Giammusso, Michael R.: *See*—
Gaunt, Wilmer B., Jr.; and Giammusso, Michael R., 4,486,876, Cl. 370-7.000.
Gifford, Jack D. Metal detector apparatus utilizing controlled phase response to reject ground effects and to discriminate between different types of metals. 4,486,713, Cl. 324-329.000.
Gilley, James E.; Vigue, Henry R.; and Sanborn, Wesley C., to Keyes Fibre Company. Accordian fold packaging tray. 4,485,610, Cl. 53-452.000.
Gimbel, Howard V. Intraocular lens system. 4,485,498, Cl. 3-13.000.
Giordano, Claudio; Minisci, Francesco; Meneghin, Mariano; and Perdoncin, Giulio, to Zambon S.p.A. Process for preparing 3alpha, 7beta-dihydroxy-5beta-cholanic acid. 4,486,352, Cl. 260-397.100.
Giordano, Claudio: *See*—
Meneghin, Mariano; Piccinelli, Piero; and Giordano, Claudio, 4,486,599, Cl. 562-469.000.
Gittos, Maurice W.: *See*—
Fozard, John R.; and Gittos, Maurice W., 4,486,441, Cl. 424-265.000.
Givaudan Corporation: *See*—
Lamparsky, Dietmar; and Kaiser, Roman, 4,486,337, Cl. 252-522.00R.
Glass, Joseph E., Jr., to Union Carbide Corporation. Treatment of water thickened systems. 4,486,340, Cl. 252-8.55D.
Glaverbel: *See*—
De Boel, Marcel, 4,485,601, Cl. 52-232.000.
Glaves, Brian: *See*—
Bridgstock, Eric; Kenworthy, David M. A.; Glaves, Brian; and Bilton, David A., 4,486,650, Cl. 219-544.000.
Gliemeroth, George; and Eichhorn, Uwe, to Schott Glaswerke. Phototropic glass with a refractive index of at least 1.59. 4,486,541, Cl. 501-13.000.
GNB Batteries Inc.: *See*—
Orlando, Daniel; Lund, David L.; and Waber, Glenn R., 4,485,959, Cl. 228-102.000.
Gneiss, Heinz; and Romann, Peter, to Robert Bosch GmbH. Method for securing electrically conductive wires to a surface. 4,486,643, Cl. 219-85.0CM.
Gobuichi, Tadashi: *See*—
Takagi, Yasumasa; Sasaki, Tomohico; Matsumura, Tadanobu; and Gobuichi, Tadashi, 4,486,058, Cl. 339-14.00R.
Gocho, Nagahiro; Tojiki, Hitomi; Hayashi, Asao; Kambara, Koji; and Nobuto, Toru, to Olympus Optical Company Limited. Intelligent copier. 4,486,787, Cl. 358-296.000.
Gokyu, Toshio: *See*—
Kenjo, Susumu; Shimahara, Minoru; and Gokyu, Toshio, 4,486,506, Cl. 428-475.200.
Gold, Vance B.; and Phalin, Thomas L., to American Can Company. Tool for making container. 4,485,663, Cl. 72-347.000.
Goldfarb, Marcia F. Inducer of T-suppressor cells. 4,486,409, Cl. 424-95.000.
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Szego , Andras; Kovats, Ferenc; Peterdi, Viktoria; Bone , Istvan; Gombos, Laszlo ; Oz, Ferenc; and Simon, Imre, 4,486,595, Cl. 548-306.000.
Gonia, Richard J., to General Electric Company. Method of making a multiconductor cable assembly. 4,486,253, Cl. 156-51.000.
Gontero, Piero: *See*—
Cestari, Bruno; Forlani, Riccardo; and Gontero, Piero, 4,486,091, Cl. 355-3.0TR.
Goodyear Tire & Rubber Company, The: *See*—
Hampshire, William J., 4,486,474, Cl. 427-296.000.
Gorbacheva, Irina N.; Sukhova, Ljudmila M.; Kozinda, Zinaida J.; Molokov, Vladislav L.; Antonov, Lev T.; Simonov, Vadim D.; Chertov, Viktor A.; Dvoskin, Semen I.; and Veseneva, Raisa S., to Tsentralny Nauchnoissledovatelsky Institut Shersti. Flame retarding antimicrobial halogenated azo dyestuffs. 4,486,347, Cl. 534-797.000.
Gordon Barlow Design: *See*—
Barlow, Gordon A.; and Krutsch, John R., 4,485,587, Cl. 446-442.000.
Gordon, Harris K.; and Myers, Howard, to Tank-Tote Co. Apparatus for supporting and transporting a gas cylinder. 4,486,044, Cl. 294-31.200.
Gorner, Bernd, to Lenox Europa Maschinen GmbH. Supporting roller winding apparatus. 4,485,980, Cl. 242-56.00R.
Gotoh, Shinichi: *See*—
Ogiro, Kenji; and Gotoh, Shinichi, 4,485,989, Cl. 242-198.000.
Ogiro, Kenji; and Gotoh, Shinichi, 4,485,990, Cl. 242-199.000.
Gottlieb, Robert, to Gang-Nail Systems, Inc. Truss structures constructed with metal web members. 4,485,606, Cl. 52-694.000.
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Rionda, Carlos; and Gottlieb, Robert, 4,486,115, Cl. 403-283.000.
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Goudsche Machinefabriek B.V.: *See*—
Witte, Johan F.; and Horsmans, Jan W. L. M., 4,486,395, Cl. 422-254.000.
Goulay, Gerard, heir: *See*—
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Goulay, Jean, deceased: *See*—
Lormeau, Jean C.; Choay, Jean; Goulay, Jean, deceased; Goulay, Marie T., heir; Goulay, Marie A., heir; and Goulay, Gerard, heir, 4,486,420, Cl. 424-183.000.
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Grabbe, Dimitry G.; and Korsunsky, Iosif. Zero insertion force connector having improved substrate clamp. 4,486,061, Cl. 339-75.0MP.
Grabovac, Bosko; and Vuceta, Ivan, to Consolidated Devices, Inc. Torque wrench. 4,485,703, Cl. 81-483.000.
Grabowski, Thaddeus J.: *See*—
Lutfy, Joseph P.; Grabowski, Thaddeus J.; and Arnold, Robert G., 4,486,273, Cl. 204-15.000.

Grant, Nicholas J. Atomization die and method for atomizing molten material. 4,485,834, Cl. 164-46.000.

Grasso, Alfie L., to Micropore International Limited. Energy regulator for a household heating appliance for producing variable speed initial heating. 4,486,648, Cl. 219-501.000.

Gravelle, Alain; Marini, Jean; and Romy, Dominique, to Framatome. Method and apparatus for monitoring the control rods of a nuclear reactor. 4,486,382, Cl. 376-216.000.

Gray, Stanley D., to Anti-Fire-Foam, Inc. Fire retardant foam. 4,486,468, Cl. 427-181.000.

Grayson, Carl L.: *See*—
Storke, Francis J.; Grayson, Carl L.; and Loker, Ernest B., 4,486,036, Cl. 285-253.000.

Green, Leland D.: *See*—
Wilmer, Michael E.; Green, Leland D.; and Tietze, Rudiger W., 4,486,781, Cl. 358-163.000.

Green, Peter C.; and Block, Jacob, to W. R. Grace & Co. High temperature stable viscosifier and fluid loss control system. 4,486,318, Cl. 252-8.50A.

Greenberger, William, to Hopp Press Incorporated, The. Message display sign. 4,485,576, Cl. 40-491.000.

Greene, Howard E.: *See*—
David, Gary S.; and Greene, Howard E., 4,486,530, Cl. 435-7.000.

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Hurnaus, Rudolf; Griss, Gerhart; Sauter, Robert; Grell, Wolfgang; Kobinger, Walter; and Pichler, Ludwig, 4,486,433, Cl. 424-250.000.

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Feger, Herbert; Griesbach, Rolf; and Geue, Franz-Hubert, 4,486,156, Cl. 417-517.000.

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Schwartz, Harvey R.; and Grossman, Samuel I., 4,485,765, Cl. 119-51.130.

Gruden, Dusan, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Internal combustion engine of the otto-type of construction with an ignition distributor and with an electronic ignition point-performance characteristics storage device. 4,485,783, Cl. 123-406.000.

Grumer, Peter, to Hauni-Werke Korber & Co. KG. Method and machine for making filter rod sections for cigarettes or the like. 4,486,186, Cl. 493-4.000.

Grundei, Manfred, to Fichtel & Sachs AG. Shock absorber unit for vehicles. 4,485,899, Cl. 188-277.000.

GTE Automatic Electric Inc.: *See*—
Beeman, Robert H.; and Chmura, Stanley J., 4,486,627, Cl. 179-175.30R.

GTE Laboratories, Incorporated: *See*—
Rubner, Michael F.; and Cukor, Peter, 4,486,463, Cl. 427-53.100.

GTE Products Corporation: *See*—
Mizuhara, Howard, 4,486,386, Cl. 420-508.000.

Guardiani, Eustachio. Prefabricated elements and rooms for the quick construction of buildings and building works in general. 4,485,598, Cl. 52-79.100.

Gueret, Jean-Louis H., to L'Oreal. Applicator for massaging the cutaneous covering. 4,485,807, Cl. 128-66.000.

Guertin, Raymond J.; Kang, Chuhong; and Matthews, Peter P., to Brown & Sharpe Manufacturing Company. Surface grinding machine. 4,485,594, Cl. 51-165.710.

Gugel, Ernst: *See*—
Leimer, Gerhard; and Gugel, Ernst, 4,486,543, Cl. 501-88.000.

Guggemos, Kenneth F., to Sterner Lighting Systems Incorporated. Lighted wind cone for evacuation aid. 4,486,754, Cl. 340-949.000.

Guilbert, Curtis R., to Minnesota Mining and Manufacturing Company. Electrical insulating powder for providing wire coating. 4,486,558, Cl. 523-466.000.

Gulden, Terry D.: *See*—
Kaae, James L.; Gulden, Terry D.; and Yang, Ling, 4,486,473, Cl. 427-249.000.

Gulyas, Imre: *See*—
Brendel nee Hajnoczki, Marta; Gulyas, Imre; Gyoker, Istvan; Zsupan, Kalman; Csorvassy, Istvan; Salamon, Zoltan; Somogyi, Gabor; Szentkiralyi, Istvan; Timar, Tibor; Biro nee Czapary, Eva; Fodor, Istvan; and Repasi, Janos, 4,486,359, Cl. 260-502.50F.

Gunderson, Curtis R. Oil change method. 4,485,853, Cl. 141-1.000.

Gunther Pacific Limited of Hong Kong: *See*—
Foster, Lawrence H., Jr., 4,485,805, Cl. 128-1.00R.

Gurtner, Bernard; Barral, Robert; and Bachelard, Roland, to Produits Chimiques Ugine Kuhlmann. Process for the preparation of high purity aluminas starting from impure aluminum chloride solutions. 4,486,402, Cl. 423-626.000.

Guscott, John K.; and Dyer, Hugh D., to American District Telegraph Company. Wall mountable modular snap-together passive infrared detector assembly. 4,486,661, Cl. 250-342.000.

Gustafsson, Alf G.; and Matts, Sigvard, to Flakt Aktiebolag. Control device for an electrostatic dust separator. 4,486,704, Cl. 323-246.000.

Gutierrez, Antonio; Brownawell, Darrell W.; and Brois, Stanley J., to Exxon Research & Engineering Co. Copper complexes of oxazolines and lactone oxazolines as lubricating oil additives. 4,486,326, Cl. 252-49.700.

Gyoker, Istvan: *See*—
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H. H. & A. Sports, Inc.: *See*—
Hamm, Harold M., 4,485,798, Cl. 124-35.00A.

H. L. & A. G. Balsinger, Inc.: *See*—
Emmett, George C., 4,485,739, Cl. 102-200.000.

H. Stoll GmbH and Company: *See*—
Ploppa, Jurgen, 4,486,623, Cl. 174-113.00R.

Haas, Edward T., Jr. Jig for holding members in radial array. 4,486,010, Cl. 269-3.000.

Hackett, Charles F.; Brauer, Eric A.; Kelleher, Kevin C.; and Wright, Richard R., to RCA Corporation. In-arm stylus cleaner for disc record player. 4,486,872, Cl. 369-71.000.

Hagedorn, Leonhard; and Schulein, Rolf-Gunter. Cleaning brush. 4,485,515, Cl. 15-184.000.

Hagemann, Casper W., to Interlake, Inc. Wire loop stitching machine head with cam-controlled staple supporter. 4,485,955, Cl. 227-89.000.

Hagiwara, Miyuki: *See*—
Hosoi, Fumio; Sasaki, Takashi; Hagiwara, Miyuki; Egusa, Shigenori; and Nanishi, Kiyoshi, 4,486,280, Cl. 204-159.110.

Haiar, Mark J.: *See*—
Deschapelles, Jorge B.; and Haiar, Mark J., 4,486,509, Cl. 428-582.000.

Hajime Industries, Ltd.: *See*—
Yoshida, Hajime, 4,486,776, Cl. 358-106.000.

Hale, John R.; and Alexander, Robert J., to RCA Corporation. Electron gun assembly with bead strap having an angulated grasping member. 4,486,685, Cl. 313-417.000.

Halff, Albert; and Vossen, Manfred. Punching devices. 4,485,708, Cl. 83-277.000.

Halford, Wayne R.; and Kelley, William J., to Mattel, Inc. Shifting mechanism for toy vehicle. 4,485,586, Cl. 446-448.000.

Hallal, Alfred J.: *See*—
Kerekes, Peter S.; Kaddis, Wagdi; and Hallal, Alfred J., 4,486,491, Cl. 428-251.000.

Hamanaka, Ernest S., to Pfizer Inc. Beta-lactamase inhibiting 6-beta-sulfonyloxypenicillanic acid derivatives. 4,486,411, Cl. 424-114.000.

Hamati, Sharbil; and Heard, M. Alvin, to Contitronix, Inc. Motor velocity control. 4,486,693, Cl. 318-561.000.

Hamm, Harold M., to H. H. & A. Sports, Inc. Bow string release. 4,485,798, Cl. 124-35.00A.

Hammes, Leo R. Control arrangement for an acreage counter. 4,486,890, Cl. 377-24.000.

Hampshire, William J., to Goodyear Tire & Rubber Company, The. Method of sizing strands. 4,486,474, Cl. 427-296.000.

Hanai, Masato: *See*—
Asahi, Taro; Higashino, Toshimitu; Ikoma, Noboru; Hanai, Masato; and Murata, Nakato, 4,486,668, Cl. 290-1.00B.

Hancock, Kendal, to Texas Recreation Corporation. Method of making a composite foamed resin ski. 4,486,368, Cl. 264-46.700.

Handl, Werner; and Engibrecht, Rupert, to J. S. Staedtler, Firma. Foamed rubber erasers and process for the production thereof. 4,485,520, Cl. 15-424.000.

Haneda, Satoshi: *See*—
Itaya, Masahiko; Haneda, Satoshi; and Okamoto, Yukio, 4,486,089, Cl. 355-3.0DD.

Hansen, Guenter: *See*—
Becker, Ernst; Bergmann, Udo; Degen, Helmut; Hansen, Guenter; and Krallmann, Reinhold, 4,486,198, Cl. 8-639.000.

Hansen, Willy: *See*—
Berstein, Garri; and Hansen, Willy, 4,485,537, Cl. 29-6.000.

Hara, Kenkichi; Yokoe, Shigeo; Oka, Kazuyoshi; Murakami, Tamotsu; and Hashimoto, Tsugifusa, to Kanto Denka Kogyo Co. Ltd.; and Tokyo Shibaura Denki Kabushiki Kaisha. Resin-coated carrier for use in two-component electrophotographic developers. 4,486,502, Cl. 428-405.000.

Hara, Masato: *See*—
Itoh, Kiyoshi; Nishikawa, Yukiyasu; Hoshika, Shuji; Hara, Masato; Ishisi, Hideyuki; Okamoto, Ikuzo; and Shindow, Osamu, 4,486,080, Cl. 351-206.000.

Harada, Haruhisa; and Maki, Hiroshi, to Sumitomo Chemical Company, Limited. Method for producing aromatic carbonyl compounds. 4,486,605, Cl. 568-311.000.

Harada, Hiromu: *See*—
Iizuka, Kinji; Kamino, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, 4,486,597, Cl. 562-455.000.

Harada, Shinichi; Furuya, Katsuhiko; and Tamada, Kazukiyo, to Kabushiki Kaisha Medos Kenkyusho. High frequency incising device. 4,485,812, Cl. 128-303.150.

Harada, Takashi: *See*—
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, 4,486,376, Cl. 264-342.00R.

Harigaya, Isao; and Yamataka, Akihiro, to Canon Kabushiki Kaisha. Computer for calculating compound interest. 4,486,849, Cl. 364-715.000.

Harman, Geoffrey E.: *See*—
Moore, Alan; Harman, Geoffrey E.; Rosser, David G.; and Clapham, Edward F., 4,485,619, Cl. 60-39.093.

Harmel, Norman A., to AT&T Technologies, Inc. Transponder telemetry. 4,486,861, Cl. 367-2.000.

Harris, Richard T.: *See*—
Harris, Theodore R.; and Harris, Richard T., 4,485,890, Cl. 181-280.000.

Harris, Theodore R.; and Harris, Richard T. Engine exhaust muffler. 4,485,890, Cl. 181-280.000.

Harrison, Sol E.: *See—*
Soll, David B.; and Harrison, Sol E., 4,486,416, Cl. 424-180.000.
Harrison Western Corporation: *See—*
Snyder, Larry L., 4,486,050, Cl. 299-18.000.
Hartleif, Hans-Peter: *See—*
Schulz, Gerd; and Hartleif, Hans-Peter, 4,486,132, Cl. 410-81.000.
Hartman, Donn A.: *See—*
Cloud, David A.; Cloud, Charles E.; Pearson, William N.; and Hartman, Donn A., 4,486,452, Cl. 426-306.000.
Hartung, Wolfgang: *See—*
Muth, Peter; Hartung, Wolfgang; Krake, Friedhelm; and Furche, Marion, 4,485,688, Cl. 74-473.00R.
Hasegawa, Akira; and Sakaguchi, Katsuyoshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Bladder handling apparatus for a tire vulcanizing machine. 4,486,162, Cl. 425-48.000.
Hashimoto, Kenshiro; Okazaki, Kunio; Tanabe, Toru; and Koguro, Toshio, to Honda Motor Co., Ltd.; and Stanley Electric Co., Ltd. Apparatus for controlling opening and closing of a retractable head lamp for an automobile. 4,486,818, Cl. 362-65.000.
Hashimoto, Kinrou: *See—*
Okumoto, Tadaoki; Sugimoto, Masatoshi; Kawazoe, Takashi; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Funato, Kenichi, 4,486,480, Cl. 428-36.000.
Hashimoto, Mitsuru, to Ricoh Company, Ltd. Tetrazonium salt, novel disazo compound, method of preparing same and electrophotographic element using same. 4,486,522, Cl. 430-79.000.
Hashimoto, Noriyoshi; and Saiki, Kazuaki, to Nippon Kogaku K. K. Driving device for a revolver in a microscope. 4,486,078, Cl. 350-520.000.
Hashimoto, Tsugifusa: *See—*
Hara, Kenkichi; Yokoe, Shigeo; Oka, Kazuyoshi; Murakami, Tamotsu; and Hashimoto, Tsugifusa, 4,486,502, Cl. 428-405.000.
Hashimoto, Yutaka, to Dainippon Ink and Chemicals, Inc.; and Kawamura Institute of Chemical Research. Separation and recovery of ionic substances by fluorine-containing compound. 4,486,391, Cl. 423-9.000.
Hass, Bertil, to AB Volvo. Instrument for measuring the clamping force between a pair of welding electrodes. 4,485,683, Cl. 73-862.530.
Hastings, Jerome K.; and Bigelow, James H., to Eaton Corporation. Shared flux reciprocal electromagnetic actuator. 4,486,728, Cl. 335-256.000.
Hatakoshi, Makoto: *See—*
Kisida, Hiroei; and Hatakoshi, Makoto, 4,486,449, Cl. 424-300.000.
Hatamura, Yotaro. Thrust-torque detector. 4,485,681, Cl. 73-862.040.
Hatter, Edwin E., to Hi-Shear Corporation. Threaded fastener having minimized length and weight and method to make it. 4,485,510, Cl. 10-10.00R.
Hatzikelis, Christopher: *See—*
Madonia, Ciro; and Hatzikelis, Christopher, 4,486,478, Cl. 428-31.000.
Haubner, Georg; and Wesemeyer, Jurgen, to Robert Bosch GmbH. Sequential program control system. 4,486,832, Cl. 364-200.000.
Haug, John A.: *See—*
Kawate, Keith W.; and Haug, John A., 4,486,700, Cl. 318-781.000.
Hauni-Werke Korber & Co. KG: *See—*
Buchegger, Joachim; and Radzio, Andrej, 4,486,098, Cl. 356-445.000.
Grumer, Peter, 4,486,186, Cl. 493-4.000.
Holzangel, Uwe, 4,485,826, Cl. 131-84.00C.
Komossa, Werner; Barck, Hans-Adolf; and Bahr, Thomas, 4,485,827, Cl. 131-84.00C.
Schlisio, Siegfried; and Schluter, Karl-Heinz, 4,485,710, Cl. 83-346.000.
Havermans, Gerardus M. J., to U.S. Philips Corporation. Digital telephone exchange with means for processing packet-switched data. 4,486,878, Cl. 370-60.000.
Hawie Manufacturing Company, The: *See—*
Hawie, Robert L., 4,485,579, Cl. 43-21.200.
Hawie, Robert L., to Hawie Manufacturing Company, The. Rod holder and alignment device. 4,485,579, Cl. 43-21.200.
Hawker, Michael J.; and Mair, Joseph, to Clayton Dewandre Company Limited. Solenoid operated valves. 4,486,053, Cl. 303-119.000.
Hayashi, Asao: *See—*
Gocho, Nagahiro; Tojiki, Hitomi; Hayashi, Asao; Kambara, Koji; and Nobuto, Toru, 4,486,787, Cl. 358-296.000.
Hayashi, Eiichi: *See—*
Endo, Kaichi; Katahira, Yoshihiro; Hayashi, Eiichi; and Nakano, Satoshi, 4,486,100, Cl. 366-76.000.
Hayashi, Katsumi, to Lubrizol Corporation, The. Carboxylic acylating agents substituted with olefin polymers of high molecular weight mono-olefins, derivatives thereof, and fuels and lubricants containing same. 4,486,573, Cl. 525-285.000.
Hayashi, Shin'ichi: *See—*
Yoshida, Akiyoshi; Kametaka, Shigeru; and Hayashi, Shin'ichi, 4,486,330, Cl. 252-174.120.
Hayashi, Yoshimasa, to Nissan Motor Company, Limited. Reciprocating compressor. 4,486,157, Cl. 417-534.000.
Hayashibe, Rinpei: *See—*
Kudo, Michio; Fukami, Tatsuo; and Hayashibe, Rinpei, 4,486,742, Cl. 340-384.00E.
Hayes Albion Corporation: *See—*
Nilson, Carl A.; and Weir, Thomas J., 4,485,656, Cl. 72-84.000.
Heard, M. Alvin: *See—*
Hamati, Sharbil; and Heard, M. Alvin, 4,486,693, Cl. 318-561.000.
Heckel, George; and Ollendick, Gary B., to Teletype Corporation. Cache memory and control circuit. 4,486,856, Cl. 364-900.000.
Heckel, Paul C., to Quickview Partners. Display system for the suppression and regeneration of characters in a series of fields in a stored record. 4,486,857, Cl. 364-900.000.
Heckmann, Klaus; and Spurny, Jiri, to Kernforschungszentrum Karlsruhe GmbH. Process for the selective separation of uranium from accompanying metals. 4,486,392, Cl. 423-11.000.
Heenan, Sidney A.: *See—*
Pricone, Robert M.; and Heenan, Sidney A., 4,486,363, Cl. 264-1.400.
Hefner, Robert E., Jr., to Dow Chemical Company, The. Reactive monomers and thermosettable compositions containing same. 4,486,582, Cl. 526-301.000.
Hegedus, Gyula: *See—*
Adonyi, Ivan; Farkas, Endre; Hegedus, Gyula; Kormendy, Attila; Mogyorosi, Istvanne ; Molnar, Geza; Sass, Szilard; Scholler, Laszlo ; Takacs, Lajos; and Vitez, Gyorgy, 4,486,825, Cl. 364-200.000.
Hegewaldt, Fritz; and Dotsch, Erwin, to Brown, Boveri & Cia AG. Continuous-flow heater for molten metals. 4,486,889, Cl. 373-142.000.
Hehl, Karl. Deep-drawing end edge-trimming die. 4,485,661, Cl. 72-332.000.
Heiber, Sonia J.: *See—*
Mueller, Karl F.; Heiber, Sonia J.; and Plankl, Walter L., 4,486,577, Cl. 525-474.000.
Heidelberger Druckmaschinen AG: *See—*
Jeschke, Willi, 4,485,737, Cl. 101-148.000.
Heikkila, Hannu, to Oy Tampella AB. Eccentric-operated vibrating apparatus. 4,485,693, Cl. 74-836.000.
Heilbecker, Joe K.; Rodgers, James D.; and Gaare, Steven C., to Foster Cathead Company. Kelly spinner. 4,485,697, Cl. 81-57.200.
Heitkamp, Dieter; and Wagener, Klaus, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Exchange-discharge body with reactive material. 4,486,481, Cl. 428-65.000.
Held, Kurt. Arrangement for the support of press bands at roller body supported double band presses. 4,485,733, Cl. 100-93.0RP.
Hellerman, John, to Hellerman, John. Pneumatic conveyor for silage and haylage. 4,486,126, Cl. 406-67.000.
Hemmerich, Johann; Kupsehus, Peter; and Fraenkle, Helmut, to Messerschmitt-Bolkow-Blohm GmbH. Heat absorber structure, particularly a plasma beam absorber. 4,485,866, Cl. 165-90.000.
Henderson, Dennis R.: *See—*
Deak, Paul S.; Henderson, Dennis R.; and Voyles, Gerald A., 4,486,809, Cl. 361-272.000.
Hendrickson, Max S.: *See—*
Maas, Michael F.; and Hendrickson, Max S., 4,486,715, Cl. 329-50.000.
Hendrych, Jiri, to Raymond Kaiser Engineers Inc. Pusher ram. 4,486,138, Cl. 414-215.000.
Hendrych, Jiri, to Raymond Kaiser Engineers Inc. Pusher ram. 4,486,139, Cl. 414-215.000.
Heniges, William B. Scotch yoke engine with variable stroke and compression ratio. 4,485,768, Cl. 123-48.00B.
Henkel Corporation: *See—*
Bateson, George F.; Arndt, Douglas; and Boyer, Steven R., 4,486,342, Cl. 260-112.00G.
Henkel Kommanditgesellschaft auf Aktien: *See—*
Koppelmann, Edgar; Krapp, Gerd; Schumann, Klaus; and Smolka, Heinz G., 4,486,314, Cl. 210-714.000.
Henrich, Robert S., to Bendix Corporation, The. Boost voltage generator. 4,486,703, Cl. 323-222.000.
Henricson, Kaj O., to A. Ahlstrom Osakeyhtio. Apparatus for washing fiber stock. 4,485,646, Cl. 68-18.00F.
Hepburn, George R., to Dynasplint Systems, Inc. Adjustable splint. 4,485,808, Cl. 128-87.00R.
Heppding, Marc A.: *See—*
O'Connor, George L.; Oswald, Ralph E.; and Heppding, Marc A., 4,485,822, Cl. 128-719.000.
Herbulot, Jean: *See—*
Villata, Gino; and Herbulot, Jean, 4,485,896, Cl. 188-72.500.
Hercules Incorporated: *See—*
Earl, Robert A., 4,486,351, Cl. 260-349.000.
Majewicz, Thomas G., 4,486,335, Cl. 252-315.300.
Hermann, Jean-Paul, to Regie Nationale des Usines Renault. Apparatus and procedure for locating three-dimensional objects packed in bulk for purposes of controlling a gripping terminal. 4,486,842, Cl. 364-513.000.
Herr, Alfons K. Fiber material. 4,486,234, Cl. 106-18.140.
Hert, Marius: *See—*
Machon, Jean-Pierre; Le Brasseur, Genevieve; Decroix, Jean-Claude; and Hert, Marius, 4,486,579, Cl. 526-65.000.
Hettich, Alfred: *See—*
Stroezel, Reinhold; Schwarze, Wilhelm W.; Roll, Karl; Hettich, Alfred; and Raidt, Wolfgang, 4,485,682, Cl. 73-862.360.
Hewitt, John H.: *See—*
Stewart, A. K.; and Hewitt, John H., 4,485,658, Cl. 72-149.000.
Hexcel Corporation: *See—*
Patz, Gary L.; and Davenport, Donald E., 4,486,490, Cl. 428-245.000.
Heyer, Raymond F.; and Lovness, William R., to Minnesota Mining and Manufacturing Company. Method of making an abrasive article comprising abrasive agglomerates supported in a fibrous matrix. 4,486,200, Cl. 51-295.000.
Hi-Shear Corporation: *See—*
Hatter, Edwin E., 4,485,510, Cl. 10-10.00R.

Hieber, Ernst; Kaden, Hans-Dieter; Martini, Helmut; and Ziegler, Gerhard, to Robert Bosch GmbH. High-temperature, high-pressure workpiece treatment system. 4,486,173, Cl. 432-205.000.
Higa, Lawrence H.: *See*—
Gardner, Charles C., 4,485,704, Cl. 82-34.00A.
Higashino, Toshimitu: *See*—
Asahi, Taro; Higashino, Toshimitu; Ikoma, Noboru; Hanai, Masato; and Murata, Nakato, 4,486,668, Cl. 290-1.00B.
Higgins, Bob J., to Trans-Aire International, Inc. RV Drapery mount and light fixture. 4,485,523, Cl. 16-94.00D.
Higgins, John C.; Wright, Harvie R. C.; and Trainer, David, to Coal Industry (Patents) Limited. Gas analyzer. 4,485,666, Cl. 73-23.000.
Hikida, Kenji: *See*—
Miyakawa, Susumu; Akado, Hajime; Taki, Yoshihiro; Hikida, Kenji; and Nakayama, Toshiaki, 4,486,206, Cl. 55-337.000.
Hilado, Rolando V. Container with cooling capability. 4,485,636, Cl. 62-430.000.
Hildebrand, Clair E.; and Wong, Franklin S., to Allied Corporation. Multistage process for preparing ferroboron. 4,486,226, Cl. 75-11.000.
Hill, Lyle M., to Raytheon Company. Transmit/receive solid state switching system. 4,486,867, Cl. 367-87.000.
Hill, William F., to Lucas Industries. Internal combustion engine function control system. 4,485,785, Cl. 123-418.000.
Hino, Naganori: *See*—
Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, 4,486,223, Cl. 71-103.000.
Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, 4,486,604, Cl. 568-33.000.
Hinrichs, Earl L.: *See*—
Klein, Dean A.; Davis, Steven C.; Wroblewski, Jerome J.; Baade, Otto; and Hinrichs, Earl L., 4,486,840, Cl. 364-474.000.
Hirai, Hideo, to Mitsuboshi Belting Ltd. Method of manufacturing toothed belts. 4,486,375, Cl. 264-254.000.
Hirai, Masaharu: *See*—
Nakata, Kazuo; Ishikawa, Tsuneo; Honma, Ichiro; Koyama, Arata; Hirai, Masaharu; and Amano, Masatoshi, 4,486,467, Cl. 427-129.000.
Hirai, Osamu; Aoyama, Tetsuya; and Mukoyama, Yoshiyuki, to Hitachi Chemical Company, Ltd. Column packing material and production thereof. 4,486,308, Cl. 210-502.100.
Hiraishi, Shigetoshi: *See*—
Matsushita, Toshihiko; Morishita, Sadao; and Hiraishi, Shigetoshi, 4,486,764, Cl. 346-209.000.
Hirano, Masahiro, to Sony Corporation. Protective circuit for power amplifier. 4,486,720, Cl. 330-298.000.
Hirata, Goichi: *See*—
Samejima, Masayoshi; Hirata, Goichi; Koida, Yoshiyuki; and Kida, Akira, 4,486,471, Cl. 427-213.300.
Hirata, Sadao; Tanikawa, Isao; and Maruhashi, Yoshitsugu, to Toyo Seikan Kaisha Ltd. Plastic bottles and process for preparation thereof. 4,486,378, Cl. 264-512.000.
Hirosawa, Yoshiaki: *See*—
Fujii, Masahiko; and Hirosawa, Yoshiaki, 4,485,784, Cl. 123-416.000.
Hirota, Akira; and Ota, Yoshihiko, to Victor Company of Japan, Ltd. Magnetic recording and/or reproducing apparatus. 4,486,789, Cl. 358-330.000.
Hirukawa Koji; and Sumida, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Power controlling apparatus for boiling water atomic reactor. 4,486,381, Cl. 376-210.000.
Hitachi Chemical Company, Ltd.: *See*—
Hirai, Osamu; Aoyama, Tetsuya; and Mukoyama, Yoshiyuki, 4,486,308, Cl. 210-502.100.
Hitachi, Ltd.: *See*—
Asahi, Naotatsu; Yamaguchi, Shizuka; Kojima, Yoshitaka; and Terakado, Katsuyoshi, 4,486,462, Cl. 427-39.000.
Chigasaki, Mitsuo; Otaka, Kiyoshi; Okayama, Akira; Onisawa, Kenichi; and Soeno, Ko, 4,486,245, Cl. 148-13.100.
Fujihira, Masamichi, 4,486,272, Cl. 204-1.00T.
Kashimura, Yuichi, 4,485,786, Cl. 123-440.000.
Kitamura, Junji; Murata, Fumiya; and Nakamura, Noboru, 4,486,828, Cl. 364-200.000.
Kobayashi, Nobuyuki; Abe, Yoritsune; Shibata, Katuo; and Watanabe, Yukio, 4,486,482, Cl. 428-69.000.
Kobayashi, Yoshiki; Maejima, Hideo; Bandoh, Tadaaki; and Nakanishi, Hiroaki, 4,486,834, Cl. 364-200.000.
Mori, Kinji; and Ihara, Hirokazu, 4,486,829, Cl. 364-200.000.
Nakano, Haruji; and Miwada, Satoshi, 4,486,634, Cl. 200-148.00R.
Nakatani, Mitsuo; Matsuyama, Haruhiko; Okunaka, Masaaki; Yokono, Hitoshi; Isogai, Tokio; Saitoh, Tadashi; and Midorikawa, Sumiyuki, 4,486,232, Cl. 75-252.000.
Ogiro, Kenji; and Gotoh, Shinichi, 4,485,989, Cl. 242-198.000.
Ogiro, Kenji; and Gotoh, Shinichi, 4,485,990, Cl. 242-199.000.
Okamoto, Yukio; Shinada, Shinichi; Okabe, Tadao; Ikarashi, Kazuhito; and Igarashi, Osamu, 4,486,747, Cl. 340-753.000.
Okuyama, Toshiaki; Kubota, Yuzuru; and Nagase, Hiroshi, 4,486,824, Cl. 363-41.000.
Sugimoto, Tatsuo; Shigyo, Seiji; Takashima, Kazutoshi; and Komaba, Yuichi, 4,485,957, Cl. 228-4.500.
Takahashi, Akio; Ono, Masahiro; Tada, Ritsuro; Wajima, Motoyo; and Morishita, Hirosada, 4,486,583, Cl. 528-422.000.
Hitachi Maxell, Ltd.: *See*—
Ogiro, Kenji; and Gotoh, Shinichi, 4,485,989, Cl. 242-198.000.
Ogiro, Kenji; and Gotoh, Shinichi, 4,485,990, Cl. 242-199.000.
Hitachi Ome Electronic Co., Ltd.: *See*—
Sugimoto, Tatsuo; Shigyo, Seiji; Takashima, Kazutoshi; and Komaba, Yuichi, 4,485,957, Cl. 228-4.500.
Hitachi Powdered Metals Company, Ltd.: *See*—
Saka, Tsutomu; Kamiyama, Toshihiro; Endo, Hiroyuki; and Ikenoue, Yutaka, 4,485,770, Cl. 123-90.390.
Hixenbaugh, Dennis L., to Pennsylvania Engineering Corporation. Pollution control device. 4,485,841, Cl. 137-315.000.
HMR Group Limited: *See*—
Olby, John K., 4,486,236, Cl. 106-299.000.
Hoag, Ethan D.; and Zieders, Glenn W., to Metalworking Lasers International Ltd. High-power lasers. 4,486,887, Cl. 372-58.000.
Hobart Corporation: *See*—
Treiber, Fritz F., 4,485,913, Cl. 198-790.000.
Hochtemperatur-Kernkraftwerk Gesellschaft mit beschrankter Haftung (HKG) Gemeinsame Europaisches Unternehmen: *See*—
Schweiger, Fritz; and Wohler, Jurgen, 4,486,380, Cl. 376-210.000.
Hodges, Wyndham; and Symonds, Collin E. Cooking utensils. 4,485,801, Cl. 126-386.000.
Hoechst Aktiengesellschaft: *See*—
Krause, Werner; and Pieper, Werner, 4,486,357, Cl. 260-502.40R.
Schoen, Klaus-Peter; and Schmitt, Klaus, 4,486,094, Cl. 355-76.000.
Hoelderich, Wolfgang; Mross, Wolf D.; and Schwarzmann, Matthias, to BASF Aktiengesellschaft. Preparation of C_2–C_4-olefins from methanol/dimethyl ether. 4,486,617, Cl. 585-640.000.
Hoemann, Keith I.; and Barker, Alan R., to Emerson Electric Co. Tapped auxiliary winding for multi-speed operation of electric motor and method therefor. 4,486,699, Cl. 318-772.000.
Hofbauer, August; Steinbeck, Herbert; and Weiner, Hans, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Fuel injection installation for a multi-cylinder aircraft engine. 4,485,788, Cl. 123-452.000.
Hoffman, Charles R., to International Business Machines Corporation. Electrically alterable read-only storage cell and method of operating same. 4,486,859, Cl. 365-185.000.
Hoffmann, Dieter: *See*—
Lubrich, Wolfgang; and Hoffmann, Dieter, 4,486,049, Cl. 299-7.000.
Hogg, James W. Spring-biased wall hanger. 4,485,995, Cl. 248-218.100.
Hohensee, John C.: *See*—
Moldovan, Peter K.; and Hohensee, John C., 4,486,733, Cl. 337-101.000.
Hohmann, Volker: *See*—
Pietsch, Hanns; and Hohmann, Volker, 4,486,488, Cl. 428-219.000.
Hohn, Fritz-Jurgen, to International Business Machines Corporation. Single crystal lanthanum hexaboride electron beam emitter having high brightness. 4,486,684, Cl. 313-336.000.
Hokuryo Denko Co., Ltd.: *See*—
Okubo, Kazutomo, 4,486,773, Cl. 358-84.000.
Holbek, Kjeld. Process for the preparation of fibers. 4,486,501, Cl. 428-375.000.
Holleis, Gunter: *See*—
Wiesinger, Horst; Holleis, Gunter; Scheurecker, Werner; and Antonitsch, Walter, 4,485,837, Cl. 164-448.000.
Holler, J. Ronald; and Wojciechowski, Francis E., to General Motors Corporation. Child restraint for passive restraint system. 4,486,031, Cl. 280-802.000.
Holubka, Joseph W., to Ford Motor Company. Epoxy-modified polybutadiene crosslinkable resin costing composition. 4,486,571, Cl. 525-110.000.
Holzangel, Uwe, to Hauni-Werke Korber & Co. KG. Apparatus for making fillers for rod-shaped smokers' products having dense ends. 4,485,826, Cl. 131-84.00C.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Fujii, Masahiko; and Hirosawa, Yoshiaki, 4,485,784, Cl. 123-416.000.
Fukuchi, Kiyoshi, 4,485,885, Cl. 180-227.000.
Fukunaga, Hirofumi; and Shiratsuchi, Kouji, 4,485,884, Cl. 180-219.000.
Ide, Masayuki; and Suzuki, Satoshi, 4,485,882, Cl. 180-68.600.
Kawaguchi, Takeshi; and Seki, Masayuki, 4,485,897, Cl. 188-73.390.
Saka, Tsutomu; Kamiyama, Toshihiro; Endo, Hiroyuki; and Ikenoue, Yutaka, 4,485,770, Cl. 123-90.390.
Honda Motor Co., Ltd.: *See*—
Hashimoto, Kenshiro; Okazaki, Kunio; Tanabe, Toru; and Koguro, Toshio, 4,486,818, Cl. 362-65.000.
Honeywell Inc.: *See*—
Abel, Irving R., 4,486,662, Cl. 250-334.000.
Brown, Peter K., 4,486,743, Cl. 340-584.000.
Carrison, Craig L., 4,486,893, Cl. 377-60.000.
Maas, Michael F.; and Hendrickson, Max S., 4,486,715, Cl. 329-50.000.
Hong, Sung Ho: *See*—
Nuttall, David A.; and Hong, Sung Ho, 4,486,268, Cl. 162-123.000.
Honjo, Yoshihiko: *See*—
Wada, Yoshiyo; Kinjo, Hisao; Ueno, Ichiro; Honjo, Yoshihiko; Tatsuguchi, Kazuo; and Shikunami, Juichi, 4,486,791, Cl. 358-342.000.
Honma, Ichiro: *See*—
Nakata, Kazuo; Ishikawa, Tsuneo; Honma, Ichiro; Koyama, Arata; Hirai, Masaharu; and Amano, Masatoshi, 4,486,467, Cl. 427-129.000.
Hope, George P., to RCA Corporation. Housing for receiving and storing printed circuit boards. 4,486,816, Cl. 361-399.000.
Hopkins, William G., Sr. Process for hanging framed articles. 4,485,561, Cl. 33-180.00R.

Hopp Press Incorporated, The: *See*—
Greenberger, William, 4,485,576, Cl. 40-491.000.
Horace Small Manufacturing Company: *See*—
Rasmussen, Conrad K., 4,485,491, Cl. 2-2.500.
Horii, Satoshi; Kameda, Yukihiko; and Fukase, Hiroshi, to Takeda Chemical Industries, Ltd. Valienamine derivatives, their production and use. 4,486,602, Cl. 564-360.000.
Horiuchi, Teruo; Jona, Nobuo; Obbu, Kazuo; and Mizushima, Naoki, to Lion Corporation. Method for the preparation of an aqueous dispersion of pearlescent agent. 4,486,334, Cl. 252-312.000.
Horiuchi, Toshiaki: *See*—
Naya, Eizo; Horiuchi, Toshiaki; Takeya, Yasushi; Inagaki, Kouichi; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,486,631, Cl. 200-144.00B.
Hornyak nee Hamori, Marya: *See*—
Schwartz, Jozsef; Hornyak nee Hamori, Marya; Sagi, Janos; Marmarosi nee Kellner, Katalin; Radvanyi nee Hegedus, Erzsebet; Szigeti, Zoltan; Cseh, Edit; and Bujtas nee Tolgyes, Klara, 4,486,222, Cl. 71-100.000.
Horodysky, Andrew G.; and Kaminski, Joan M., to Mobil Oil Corporation. Friction reducing additives and lubricating oil compositions containing same. 4,486,321, Cl. 252-46.300.
Horodysky, Andrew G.; and Kaminski, Joan M., to Mobil Oil Corporation. Trihydroxyhydrocarbyl sulfide and lubricants containing same. 4,486,322, Cl. 252-48.200.
Horodysky, Andrew G.; and Kaminski, Joan M., to Mobil Oil Corporation. Lubricants containing borated mixtures of alcohols and sulfides. 4,486,323, Cl. 252-48.400.
Horsmans, Jan W. L. M.: *See*—
Witte, Johan F.; and Horsmans, Jan W. L. M., 4,486,395, Cl. 422-254.000.
Horvath, Gyula: *See*—
Baksa, Gyorgy; Boros, Jozsef; Horvath, Gyula; Ihasz, Balazs; Pais, Zoltan; Rainis, Matyas; Sitkei, Ferenc; Solymar, Karoly; Toth, Bela; Vallo, Ferenc; Voros, Istvan; Orban nee Kelemen, Maria; and Zoldi, Jozsef, 4,486,393, Cl. 423-121.000.
Hosfeld, Lewis K.; and Lenox, Ronald S., to Armstrong World Industries, Inc. Magnetic toner particles coated with opaque polymer particles to obscure color thereof. 4,486,523, Cl. 430-106.600.
Hoshika, Shuji: *See*—
Itoh, Kiyoshi; Nishikawa, Yukiyasu; Hoshika, Shuji; Hara, Masato; Ishiai, Hideyuki; Okamoto, Ikuzo; and Shindow, Osamu, 4,486,080, Cl. 351-206.000.
Hosoi, Fumio; Sasaki, Takashi; Hagiwara, Miyuki; Egusa, Shigenori; and Nanishi, Kiyoshi, to Japan Atomic Energy Research Institute. Self-curing modified epoxy resin composition and aqueous dispersion thereof. 4,486,280, Cl. 204-159.110.
Hotten, Terrence M.: *See*—
Chakrabarti, Jiban K.; and Hotten, Terrence M., 4,486,591, Cl. 544-371.000.
Houdaille Industries, Inc.: *See*—
Klein, Dean A.; Davis, Steven C.; Wroblewski, Jerome J.; Baade, Otto; and Hinrichs, Earl L., 4,486,840, Cl. 364-474.000.
Hough, Gregory L. Tool for removing bases of broken light bulbs. 4,485,701, Cl. 81-64.000.
Houts, Ronald C.: *See*—
Ball, James H.; Houts, Ronald C.; and Schaetzel, Phillip R., 4,486,620, Cl. 174-41.000.
Howard, Edwin L. Device for determining weight of objects being moved. 4,486,136, Cl. 414-21.000.
Hsieh, Shuang-shii; and Lehr, James R., to Tennessee Valley Authority. Method of beneficiating high carbonate phosphate ore. 4,486,301, Cl. 209-167.000.
Huber, Doyle W.; Smith, Richard H.; and Strong, Robert L., to Boeing Company, The. Apparatus for punching holes in a moving strip. 4,485,709, Cl. 83-324.000.
Huber, Ernst; Rieger, Wolfhart; and Bolliger, Martin, to Swiss Aluminium Ltd. Nozzle for strip casting. 4,485,835, Cl. 164-430.000.
Huber, Reinhold; and Koster, Waldemar. Arrangement for bridging expansion joints in carriage ways, especially bridges. 4,486,118, Cl. 404-56.000.
Huber & Suhner Ltd.: *See*—
Schafer, Robert H.; and Bosshard, Andreas, 4,486,726, Cl. 333-260.000.
Hudson, James H.; and Otto, Arthur W., deceased (by Otto, Christine, administratrix), to Leak Detective, Inc. Leak detector for pressurized pipes. 4,485,668, Cl. 73-40.50A.
Hughes Aircraft Company: *See*—
Walker, Donald F., 4,486,746, Cl. 340-750.000.
Hughes, Robert D., IV: *See*—
King, Eddie W.; and Hughes, Robert D., IV, 4,485,633, Cl. 62-180.000.
Huizer, Willem: *See*—
Ongkiehong, Leo; and Huizer, Willem, 4,486,864, Cl. 367-23.000.
Hulber, Loren J.; and Stuertz, William D., to Jostens, Inc. Data binder slide. 4,486,111, Cl. 402-17.000.
Hulland, Burton L.; and Litchford, George B., to Litchstreet Co. Collision avoidance system. 4,486,755, Cl. 343-6.5LC.
Hung, Chi-wen: *See*—
Imai, Tamotsu; and Hung, Chi-wen, 4,486,547, Cl. 502-223.000.
Hung, Fa C. Rotating wind-guiding shell for the fan. 4,486,144, Cl. 415-121.00G.
Huret et ses Fils: *See*—
Coue, Maurice E. L., 4,486,182, Cl. 474-80.000.
Hurnaus, Rudolf; Griss, Gerhart; Sauter, Robert; Grell, Wolfgang; Kobinger, Walter; and Pichler, Ludwig, to Dr. Karl Thomae Gesellschaft mit beschrankter Haftung. Fused-ring amino-pyrazines as bradycardiacs. 4,486,433, Cl. 424-250.000.
Hurst Performance, Inc.: *See*—
Cambria, Emanuel F., 4,485,689, Cl. 74-477.000.
Hussar, Nick: *See*—
Linton, John H.; and Hussar, Nick, 4,486,451, Cl. 426-31.000.
Huttunen, Jouko: *See*—
Turunen, Olli; Mandell, Leo; Eklund, Vidar; Ekman, Kurt; and Huttunen, Jouko, 4,486,585, Cl. 536-30.000.
Hyatt, Gilbert P. Incremental digital filter. 4,486,850, Cl. 364-747.000.
Hybritech Incorporated: *See*—
David, Gary S.; and Greene, Howard E., 4,486,530, Cl. 435-7.000.
Hydro Rene Leduc: *See*—
Porel, Louis-Claude, 4,486,152, Cl. 417-270.000.
Hytti, Teuvo T., to OY Partek AB. Method for manufacturing insulating troughs for pipes, and an apparatus for carrying out the method. 4,485,715, Cl. 83-875.000.
Ichikawa, Masayoshi: *See*—
Okumoto, Tadaoki; Sugimoto, Masatoshi; Kawazoe, Takashi; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Funato, Kenichi, 4,486,480, Cl. 428-36.000.
Ichinokawa, Kazuhiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Mechanism for preventing collision of half-speed mirror from occurring in variable scale factor copying apparatus. 4,486,092, Cl. 355-8.000.
Icking, Friedrich, to Westfalia Separator AG. Method for direct measurement of the amount of milk obtained from a cow by a milking system during milking. 4,485,763, Cl. 119-14.170.
Icking, Friedrich; and Bucker, Heinrich, to Westfalia Separator AG. Cleansing arrangement for a milking machine. 4,485,830, Cl. 134-100.000.
Ide, Masayuki; and Suzuki, Satoshi, to Honda Giken Kogyo Kabushiki Kaisha. Engine compartment for automobiles. 4,485,882, Cl. 180-68.600.
Idemitsu Kosan Company Limited: *See*—
Mizutani, Makoto, 4,486,497, Cl. 428-332.000.
Ideta, Yasufumi: *See*—
Udono, Jun; and Ideta, Yasufumi, 4,485,904, Cl. 192-0.094.
Igarashi, Isamu: *See*—
Nakao, Hideo; Fujimoto, Koichi; Ishihara, Sadao; Sugawara, Shinichi; and Igarashi, Isamu, 4,486,425, Cl. 424-246.000.
Igarashi, Osamu: *See*—
Okamoto, Yukio; Shinada, Shinichi; Okabe, Tadao; Ikarashi, Kazuhito; and Igarashi, Osamu, 4,486,747, Cl. 340-753.000.
Igl, Wolfgang. Mechanical accessory for commercially available compound apparatuses for echo mammography. 4,485,819, Cl. 128-660.000.
Ihara, Hirokazu: *See*—
Mori, Kinji; and Ihara, Hirokazu, 4,486,829, Cl. 364-200.000.
Ihasz, Balazs: *See*—
Baksa, Gyorgy; Boros, Jozsef; Horvath, Gyula; Ihasz, Balazs; Pais, Zoltan; Rainis, Matyas; Sitkei, Ferenc; Solymar, Karoly; Toth, Bela; Vallo, Ferenc; Voros, Istvan; Orban nee Kelemen, Maria; and Zoldi, Jozsef, 4,486,393, Cl. 423-121.000.
Iimura, Seiji: *See*—
Narita, Yukio; Iimura, Seiji; Aburaki, Shimpei; Okumura, Jun; and Naito, Takayuki, 4,486,586, Cl. 544-022.000.
Iinuma, Kazuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Doppler effect blood flow sensing device displaying signals lying within a band width related to sampling frequency. 4,485,821, Cl. 128-663.000.
IIT Research Institute: *See*—
Sresty, Guggilam C.; Dev, Harsh; Snow, Richard H.; and Bridges, Jack E., 4,485,868, Cl. 166-248.000.
Sresty, Guggilam C.; Snow, Richard H.; and Bridges, Jack E., 4,485,869, Cl. 166-248.000.
Iizuka, Kinji; Kamino, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, to Kissei Pharmaceutical Co., Ltd. Method for the production of nuclear substituted cinnamoylanthranilic acid derivatives. 4,486,597, Cl. 562-455.000.
Ikarashi, Kazuhito: *See*—
Okamoto, Yukio; Shinada, Shinichi; Okabe, Tadao; Ikarashi, Kazuhito; and Igarashi, Osamu, 4,486,747, Cl. 340-753.000.
Ikeda Bussan Co., Ltd.: *See*—
Shimomura, Kenji, 4,486,367, Cl. 264-39.000.
Ikeda, Hiroshi: *See*—
Ootani, Naoteru; Ishii, Takashi; and Ikeda, Hiroshi, 4,486,338, Cl. 252-545.000.
Ikeda, Yasuhiko: *See*—
Murakami, Tadaki; Ikeda, Yasuhiko; and Ishii, Isao, 4,486,546, Cl. 501-153.000.
Ikemura, Yuichi: *See*—
Machida, Toyotaka; Noda, Teruaki; and Ikemura, Yuichi, 4,486,771, Cl. 358-29.000.
Ikenoue, Yutaka: *See*—
Saka, Tsutomu; Kamiyama, Toshihiro; Endo, Hiroyuki; and Ikenoue, Yutaka, 4,485,770, Cl. 123-90.390.
Ikoma, Noboru: *See*—
Asahi, Taro; Higashino, Toshimitu; Ikoma, Noboru; Hanai, Masato; and Murata, Nakato, 4,486,668, Cl. 290-1.00B.
Ikuta, Yasuhiro: *See*—
Moriguchi, Koichi; Iwamoto, Kenzi; Kawai, Hisasi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,485,626, Cl. 60-602.000.
Image Graphics, Incorporated: *See*—
Tarnowski, Andrew A., 4,486,761, Cl. 346-161.000.

Imai, Tamotsu; and Hung, Chi-wen, to UOP Inc. Indium-containing dehydrogenation catalyst. 4,486,547, Cl. 502-223.000.

Imaizumi, Tomio: *See*—
Kato, Tetuo; Miura, Ieaki; Ashiba, Masahiro; and Imaizumi, Tomio, 4,485,900, Cl. 188-282.000.

Imazu, Shigeki: *See*—
Fujimoto, Misao; Ishii, Shoso; Yada, Yoshikuni; and Imazu, Shigeki, 4,485,625, Cl. 60-601.000.

Imhof, Robert: *See*—
Gertsch, Peter; Imhof, Robert; and Zahnd, Andreas, 4,485,738, Cl. 101-365.000.

Imperial Chemical Industries PLC: *See*—
Bentley, Philip D.; and Punja, Nazim, 4,486,355, Cl. 260-465.00G.
Jung, Frederic H.; and Davies, Gareth M., 4,486,426, Cl. 424-246.000.

Imperial Clevite Inc.: *See*—
Brady, Kenneth T., 4,485,845, Cl. 137-614.040.

INA Walzlager Schaeffler KG: *See*—
Oetjen, Jurgen; and Lunz, Erich, 4,486,054, Cl. 308-6.00C.

Inaba, Takehiko: *See*—
Miyake, Yutaka; Murata, Susumu; and Inaba, Takehiko, 4,486,105, Cl. 384-114.000.

Inagaki, Kouichi: *See*—
Naya, Eizo; Horiuchi, Toshiaki; Takeya, Yasushi; Inagaki, Kouichi; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,486,631, Cl. 200-144.00B.

Inamori, Takao: *See*—
Takeuchi, Kunio; and Inamori, Takao, 4,485,660, Cl. 72-313.000.

Inao, Hiroshi: *See*—
Yamamoto, Sakuei; Inao, Hiroshi; Tokumitsu, Kiyonori; Nishida, Mitsuhiro; Ishikawa, Takatoshi; and Sakabe, Shigekazu, 4,486,677, Cl. 310-64.000.

Ing. C. Olivetti & C., S.p.A.: *See*—
Cestari, Bruno; Forlani, Riccardo; and Gontero, Piero, 4,486,091, Cl. 355-3.0TR.

Ingram Corporation: *See*—
Buckner, James E., 4,486,137, Cl. 414-22.000.

Inooka, Masayoshi, to Chiyoda Chemical Engineering & Construction Co., Ltd. Processing heavy hydrocarbon oils. 4,486,295, Cl. 208-96.000.

Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,486,642, Cl. 219-69.00W.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Electroerosive contour-machining method. 4,486,642, Cl. 219-69.00W.

Inoue, Tokuta: *See*—
Kanda, Mutsumi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,485,773, Cl. 123-188.00M.
Kanda, Mutsumi; Nakanishi, Kiyoshi; Okumura, Takeshi; Kotani, Takeshi; and Inoue, Tokuta, 4,485,774, Cl. 123-188.00M.
Kanda, Mutsumi; Nakanishi, Kiyoshi; Okumura, Takeshi; Kotani, Takeshi; and Inoue, Tokuta, 4,485,775, Cl. 123-188.00M.

Inoue, Yoshio, to Jidosha Kiki Co., Ltd. Assistor for transmission. 4,485,726, Cl. 91-375.00R.

Installatiegroep van Buuren-Van Swaay B.V.: *See*—
Marijnissen, Gerard J.; and Schenk, Robert, 4,486,204, Cl. 55-267.000.

Institut Glaznykh Boleznei Imeni Gelmgoltsa: *See*—
Emanuel, Nikolai M.; Shvedova, Anna A.; Smirnov, Leonid D.; Spirina, Larisa V.; and Katsnelson, Lev A., 4,486,440, Cl. 424-263.000.

Institut Khimicheskoi Fiziki: *See*—
Emanuel, Nikolai M.; Shvedova, Anna A.; Smirnov, Leonid D.; Spirina, Larisa V.; and Katsnelson, Lev A., 4,486,440, Cl. 424-263.000.

Intercontinental Engineering-Manufacturing Corporation: *See*—
Kuhlman, Clare, 4,486,007, Cl. 254-376.000.

Interlake, Inc.: *See*—
Hagemann, Casper W., 4,485,955, Cl. 227-89.000.

International Business Machines Corporation: *See*—
Abraham, Dennis G.; and Gallman, Thomas W., 4,486,784, Cl. 358-261.000.
Feliss, Norbert A.; and Lile, Tim W., 4,486,798, Cl. 360-103.000.
Franaszek, Peter A.; and Widmer, Albert X., 4,486,739, Cl. 340-347.0DD.
Frank, Vlastimil, 4,485,914, Cl. 198-834.000.
Hoffman, Charles R., 4,486,859, Cl. 365-185.000.
Hohn, Fritz-Jurgen, 4,486,684, Cl. 313-336.000.
Lasher, Dana A.; and Stelzenmuller, William K., 4,486,785, Cl. 358-284.000.
Magdo, Ingrid E.; and Rupprecht, Hans S., 4,485,552, Cl. 29-577.00C.
Peugh, Herbert V.; and Ward, Albert W., 4,485,758, Cl. 118-52.000.
Powell, Kenneth E., 4,486,653, Cl. 235-449.000.
Pratt, Richard L.; and Thornton, Francis J., 4,486,744, Cl. 340-606.000.
Workman, Michael L., 4,486,797, Cl. 360-78.000.

International Flavors & Fragrances Inc.: *See*—
Klemarczyk, Philip T.; Dekker, Lambert; and Kiwala, Jacob, 4,485,828, Cl. 131-276.000.

International Standard Electric Corporation: *See*—
Freeman, Albert L.; Taylor, Brian H.; and Smith, Roy E. R., 4,486,727, Cl. 335-106.000.

International Telephone and Telegraph Corporation: *See*—
Majkrzak, Charles P., 4,486,725, Cl. 333-248.000.

Intersil, Inc.: *See*—
Chan, Yiu-Fai; and Evans, Allen L., 4,486,670, Cl. 307-264.000.

Irie, Nobuhiko, to Mitsubishi Jukogyo Kabushiki Kaisha. Bead lock means for tire-forming drum. 4,486,259, Cl. 156-398.000.

Irwin, George W.; and Mumford, Eustace H., to Owens-Illinois, Inc. Quadruple cavity glass mold operating apparatus. 4,486,215, Cl. 65-360.000.

Ishi, Akira: *See*—
Sakurai, Kiyoshi; Ishi, Akira; and Abe, Yoshihiro, 4,486,320, Cl. 252-12.600.

Ishiai, Hideyuki: *See*—
Itoh, Kiyoshi; Nishikawa, Yukiyasu; Hoshika, Shuji; Hara, Masato; Ishiai, Hideyuki; Okamoto, Ikuzo; and Shindow, Osamu, 4,486,080, Cl. 351-206.000.

Ishibashi, Satoshi: *See*—
Sueoka, Tetsuro; and Ishibashi, Satoshi, 4,486,768, Cl. 357-38.000.

Ishigami, Sumiyuki; and Sato, Mitsuru, to Tokyo Denpa Kabushiki Kaisha; and Kabushiki Kaisha Goto Seisakusko. Y-Shaped support for piezoelectric resonator. 4,486,681, Cl. 310-353.000.

Ishihara, Sadao: *See*—
Nakao, Hideo; Fujimoto, Koichi; Ishihara, Sadao; Sugawara, Shinichi; and Igarashi, Isamu, 4,486,425, Cl. 424-246.000.

Ishihara Sangyo Kaisha, Ltd.: *See*—
Nakata, Kazuo; Ishikawa, Tsuneo; Homma, Ichiro; Koyama, Arata; Hirai, Masaharu; and Amano, Masatoshi, 4,486,467, Cl. 427-129.000.

Ishii, Isao: *See*—
Murakami, Tadaki; Ikeda, Yasuhiko; and Ishii, Isao, 4,486,546, Cl. 501-153.000.

Ishii, Shoso: *See*—
Fujimoto, Misao; Ishii, Shoso; Yada, Yoshikuni; and Imazu, Shigeki, 4,485,625, Cl. 60-601.000.

Ishii, Takashi: *See*—
Ootani, Naoteru; Ishii, Takashi; and Ikeda, Hiroshi, 4,486,338, Cl. 252-545.000.

Ishikawa, Takatoshi: *See*—
Yamamoto, Sakuei; Inao, Hiroshi; Tokumitsu, Kiyonori; Nishida, Mitsuhiro; Ishikawa, Takatoshi; and Sakabe, Shigekazu, 4,486,677, Cl. 310-64.000.

Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Eguchi, Kiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Drawer-type circuit breaker. 4,486,814, Cl. 361-339.000.

Ishikawa, Tsuneo: *See*—
Nakata, Kazuo; Ishikawa, Tsuneo; Homma, Ichiro; Koyama, Arata; Hirai, Masaharu; and Amano, Masatoshi, 4,486,467, Cl. 427-129.000.

Isida, Tosio: *See*—
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, 4,486,376, Cl. 264-342.00R.

Isobe, Masahiro, to Toyota Jidosha Kabushiki Kaisha. Anti vibration mounting with reinforced bracket. 4,485,999, Cl. 248-659.000.

Isogai, Tokio: *See*—
Nakatani, Mitsuo; Matsuyama, Haruhiko; Okunaka, Masaaki; Yokono, Hitoshi; Isogai, Tokio; Saitoh, Tadashi; and Midorikawa, Sumiyuki, 4,486,232, Cl. 75-252.000.

Itakura, Haruo, to Konishiroku Photo Industry Co., Ltd. Power source for a developing bias. 4,486,821, Cl. 363-18.000.

Itano, Naoaki: *See*—
Koyama, Katsumi; Kojima, Shigenori; Kogure, Tsuneo; Itano, Naoaki; and Ohashi, Yoshihiko, 4,486,841, Cl. 364-474.000.

Itaya, Masahiko; Haneda, Satoshi; and Okamoto, Yukio, to Konishiroku Photo Industry Co., Ltd. Magnetic brush developing means. 4,486,089, Cl. 355-3.0DD.

Ito, Michio: *See*—
Kitamura, Takashi; and Ito, Michio, 4,486,088, Cl. 355-3.0CH.

Ito, Nobuaki: *See*—
Yoshida, Yukio; Tanaka, Akira; Fukumoto, Ryutaro; Akimoto, Ryosaku; Tanaka, Shigetoshi; and Ito, Nobuaki, 4,485,863, Cl. 165-42.000.

Ito, Novuei: *See*—
Atsumi, Kinya; and Ito, Novuei, 4,486,651, Cl. 219-553.000.

Ito, Takashi; and Kato, Ichiro, to Fujitsu Limited. Method and apparatus for gas phase treating substrates. 4,486,461, Cl. 427-38.000.

Itoh, Hiroshi; and Endo, Motoki, to Toyota Jidosha Kabushiki Kaisha. Apparatus and method for electronic control of automatic transmission avoiding over-quick double gear changing. 4,486,838, Cl. 364-424.100.

Itoh, Kenji, to Victor Company of Japan, Ltd. Head servo circuit in a magnetic reproducing apparatus. 4,486,794, Cl. 360-70.000.

Itoh, Kiyoshi; Nishikawa, Yukiyasu; Hoshika, Shuji; Hara, Masato; Ishiai, Hideyuki; Okamoto, Ikuzo; and Shindow, Osamu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Device for detecting blinking of an eye under examination. 4,486,080, Cl. 351-206.000.

ITT Industries, Inc.: *See*—
Pitt, Gillies D.; Williamson, Roger J.; Batchelder, David N.; and Prabakaran, Arulanandam M., 4,485,679, Cl. 73-861.220.

Ivanov, Alexei I.: *See*—
Chernousov, Alexandr F.; Domrachev, Sergei A.; Ivanov, Alexei I.; Malyshev, Boris N.; Saljuk, Viktor A.; Skobelkin, Oleg K.; and Brekhov, Evgeny I., 4,485,811, Cl. 128-303.100.

Ive, John G. S., to Sony Corporation. Sequential data block address processing circuits. 4,486,780, Cl. 358-160.000.

Iverlund, Bertil G.; Risman, Per Olov G.; and Uddborn, Hans G., to Aktiebolaget Edane Komponenter. Method of carrying out the drying of wooden objects. 4,485,564, Cl. 34-1.000.

Iwamoto, Kenzi: *See*—
Moriguchi, Koichi; Iwamoto, Kenzi; Kawai, Hisasi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,485,626, Cl. 60-602.000.

Iwata, Susumu: *See*—
Taniguchi, Keishi; Iwata, Susumu; and Sakamoto, Hiroshi, 4,486,763, Cl. 346-209.000.
Izumi, Rokuro: *See*—
Matsumoto, Kunio; Izumi, Rokuro; Seijo, Hideji; and Mizuguchi, Hiroyuki, 4,486,549, Cl. 521-53.000.
J. A. Richards Company: *See*—
Richards, Robert E., 4,485,664, Cl. 72-386.000.
J. S. Staedtler, Firma: *See*—
Handl, Werner; and Englbrecht, Rupert, 4,485,520, Cl. 15-424.000.
Jackovich, Melvin C.; Spencer, William; and Thom, James B., to Sundstrand Corporation. Generator shorted diode protection system. 4,486,801, Cl. 361-21.000.
Jacob, Joseph, to Technology Unlimited Inc. Tampon. 4,486,191, Cl. 604-330.000.
Jacobs Mfg. Company, The: *See*—
Price, Robert B.; and Jakuba, Stanislav, 4,485,780, Cl. 123-321.000.
Jacobsson, Rolf A.: *See*—
Adman, Nils G.; and Jacobsson, Rolf A., 4,485,698, Cl. 81-57.110.
Jacques, Alain: *See*—
Ellis, Roger D.; Demangeon, Yvon; and Jacques, Alain, 4,486,329, Cl. 252-117.000.
Jagenberg AG: *See*—
Dropczynski, Hartmut, 4,485,979, Cl. 242-56.00R.
Jagisch, Frank C.; and Evans, Morris L., to Exxon Research & Engineering Co. Aqueous emulsions of high softening point hydrocarbon resins and process for preparing the same. 4,486,563, Cl. 524-158.000.
Jakuba, Stanislav: *See*—
Price, Robert B.; and Jakuba, Stanislav, 4,485,780, Cl. 123-321.000.
Jameson, Calvin R.: *See*—
Frates, Paul S.; Jameson, Calvin R.; Petrecca, Peter J.; and Scholl, Charles H., 4,485,941, Cl. 222-146.500.
Jamison, Warren E., to Armco, Inc. Microporous ionomer polymer lubricating composition. 4,486,319, Cl. 252-12.200.
Janisiewicz, Stanley, to Universal Instruments Corporation. Cut and clinch head for trimming, forming and detecting lead presence and absence of DIP components. 4,485,548, Cl. 29-566.300.
Janiszewski, Grzegorz K.: *See*—
Radbo, Berndt E.; and Janiszewski, Grzegorz K., 4,485,905, Cl. 192-103.00A.
Janome Sewing Machine Co., Ltd.: *See*—
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kume, Toshiaki; and Kakimura, Toshihide, 4,485,750, Cl. 112-158.00E.
Janssen Pharmaceutica Inc.: *See*—
Kenyhercz, Thomas M., 4,486,423, Cl. 424-267.000.
Japan Atomic Energy Research Institute: *See*—
Hosoi, Fumio; Sasaki, Takashi; Hagiwara, Miyuki; Egusa, Shigenori; and Nanishi, Kiyoshi, 4,486,280, Cl. 204-159.110.
Japan Bano'k Co., Ltd.: *See*—
Furutsu, Akira, 4,485,954, Cl. 227-67.000.
Japan Exlan Company Limited: *See*—
Nakajima, Shigeru; and Ozaki, Masahiko, 4,486,311, Cl. 210-635.000.
Jayne, Murray L. Increasing traction of rolling wheel. 4,486,039, Cl. 291-3.000.
Jedlicka, Glen J.; and Baker, Curtis L., to Armour Food Company. Process for removing packaging materials from packaged products. 4,486,645, Cl. 219-121.0LN.
Jeffers, William; Seeley, Douglas; Faust, Raimund J.; and Liu, Shuchen, to American Hoechst Corporation. Dialo printing plate made from laser. 4,486,529, Cl. 430-300.000.
Jeffery, Philip A.; Reed, L. J.; and Spangler, Harold L., to Motorola, Inc. Output multiplexer having one gate delay. 4,486,880, Cl. 370-112.000.
Jehan, Michel: *See*—
Douchy, Michel; Tranchant, Jean-Louis; and Jehan, Michel, 4,486,227, Cl. 75-53.000.
Jelinek, Nikolaus: *See*—
Ertl, Franz; Fleck, Adolf; and Jelinek, Nikolaus, 4,485,565, Cl. 34-4.000.
Jeschke, Willi, to Heidelberger Druckmaschinen AG. Device for ink profile-dependent regulation dampening solution. 4,485,737, Cl. 101-148.000.
JGC Corporation: *See*—
Matsumoto, Hideyuki; and Bando, Shiyouichi, 4,486,297, Cl. 208-211.000.
Jidosha Kiki Co., Ltd.: *See*—
Inoue, Yoshio, 4,485,726, Cl. 91-375.00R.
Johns Hopkins University, The: *See*—
Flower, Robert W., 4,485,820, Cl. 128-633.000.
Johnson & Johnson Products, Inc.: *See*—
Dellas, James P., 4,485,809, Cl. 128-156.000.
Johnson, Michael R.; and Melvin, Lawrence S., Jr., to Pfizer Inc. Pharmacologically active 4-[2-hydroxy-4-(substituted)phenyl]naphthalen-2(1H)-ones and 2-ols, derivatives thereof and intermediates therefor. 4,486,609, Cl. 568-734.000.
Johnson, Michael R.: *See*—
Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,486,428, Cl. 424-248.400.
Johnston, Vaughn R., to Washington Rotating Control Heads, Inc. Stripper packer. 4,486,025, Cl. 277-31.000.
Jokisch, Friedrich, to Krupp-Koppers GmbH. Method of dry cooling coke. 4,486,269, Cl. 201-1.000.
Jona, Nobuo: *See*—
Horiuchi, Teruo; Jona, Nobuo; Ohbu, Kazuo; and Mizushima, Naoki, 4,486,334, Cl. 252-312.000.
Jonca, Henri V. J., to Societa Nationale Industrielle et Aerospatiale. Automatized printing machine and printing unit for such a machine. 4,485,735, Cl. 101-93.210.
Jones, Dedger. High temperature engine and seal. 4,485,628, Cl. 60-650.000.
Jones, Donald W., to General Electric Company. Permanent magnet rotor and method of making same. 4,486,679, Cl. 310-218.000.
Jones, Edward L., to United Kingdom Atomic Energy Authority. Coupling devices to containers for radioactive material. 4,486,666, Cl. 250-497.100.
Jones, Hartl R.: *See*—
Dulian, Robert J.; Kemp, David M.; Jones, Hartl R.; and Conway, Raymond J., 4,485,856, Cl. 141-198.000.
Jones, Jesse D.: *See*—
Chung, James Y. J.; Jones, Jesse D.; and Li, Hsueh M., 4,486,561, Cl. 524-107.000.
Jorgensen, Aage B., to Aktieselskabet Nordiske Kabel- og Traadfabriker. Screen. 4,486,302, Cl. 209-399.000.
Josso, Pierre; Lepetit, Pierre; Mazars, Pierre; and Massard, Marcel J., deceased (by Massard, Yvette L., heiress), to Office National d'Etudes et de Recherche Aerospatiales. Nickel and/or cobalt chemical plating bath using a reducing agent based on boron or phosphorous. 4,486,233, Cl. 106-1.220.
Jostens, Inc.: *See*—
Hulber, Loren J.; and Stuertz, William D., 4,486,111, Cl. 402-17.000.
Joy Manufacturing Company: *See*—
Becker, Harry R., 4,486,051, Cl. 299-78.000.
Meyer, Danny S.; and Moran, George A., 4,486,003, Cl. 251-328.000.
Jugan, Michael R.: *See*—
Moore, William G.; Eckels, Phillip W.; and Jugan, Michael R., 4,486,676, Cl. 310-52.000.
Jung, Frederic H.; and Davies, Gareth M., to Imperial Chemical Industries PLC. Unsaturated cephalosporin derivatives. 4,486,426, Cl. 424-246.000.
Justice, Voyd H. Suspension strut adjusting tool. 4,485,662, Cl. 72-380.000.
Kaae, James L.; Gulden, Terry D.; and Yang, Ling, to GA Technologies Inc. Method and apparatus for coating fragile articles in a fluidized bed of particles using chemical vapor deposition. 4,486,473, Cl. 427-249.000.
Kaasenbrood, Petrus J. C., to Unie Van Kunstmestfabrieken B.V. Apparatus for the removal of ammonium carbamate from a urea-synthesis solution. 4,486,270, Cl. 202-201.000.
Kabushiki Kaisha Aoyama Seisakusho: *See*—
Kazino, Hiroshi, 4,486,135, Cl. 411-387.000.
Kabushiki Kaisha Daikin Seisakusho: *See*—
Nishimura, Yoshio, 4,485,907, Cl. 192-106.200.
Kabushiki Kaisha Goto Seisakusko: *See*—
Ishigami, Sumiyuki; and Sato, Mitsuru, 4,486,681, Cl. 310-353.000.
Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See*—
Sugimoto, Kaname; and Miyake, Toshio, 4,486,417, Cl. 424-180.000.
Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Kitagawa, Hiroshi, 4,485,717, Cl. 84-1.220.
Kabushiki Kaisha Kobe Seiko Sho: *See*—
Fujiwara, Kazuo; Tomari, Haruo; Aritomi, Osamu; and Sato, Nobuhiro, 4,486,231, Cl. 75-125.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Yamamuro, Toshikazu; Shiotsubo, Masami; and Saito, Hiroshi, 4,486,124, Cl. 405-184.000.
Kabushiki Kaisha Medos Kenkyusho: *See*—
Harada, Shinichi; Furuya, Katsuhiko; and Tamada, Kazukiyo, 4,485,812, Cl. 128-303.150.
Kabushiki Kaisha Meidensha: *See*—
Sueoka, Tetsuro; and Ishibashi, Satoshi, 4,486,768, Cl. 357-38.000.
Kabushiki Kaisha Toshiba: *See*—
Kato, Shuichiro; Yabu, Yoshinori; and Kinoshita, Yoshihiro, 4,485,643, Cl. 62-519.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Anahara, Meiji; and Suzuki, Yoshihisa, 4,485,528, Cl. 19-258.000.
Morita, Takayuki; Muramatsu, Shigeru; and Fukuda, Tatemi, 4,485,616, Cl. 57-261.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Kamigaito, Osami; Doi, Haruo; and Fukushima, Yoshiaki, 4,486,235, Cl. 106-287.120.
Kurauchi, Toshio; Takahashi, Hidero; Sato, Shigeyuki; Murase, Makoto; Takahara, Minoru; Ohi, Tamio; and Kamio, Takaki, 4,486,373, Cl. 264-142.000.
Kaddis, Wagdi: *See*—
Kerekes, Peter S.; Kaddis, Wagdi; and Hallal, Alfred J., 4,486,491, Cl. 428-251.000.
Kaden, Hans-Dieter: *See*—
Hieber, Ernst; Kaden, Hans-Dieter; Martini, Helmut; and Ziegler, Gerhard, 4,486,173, Cl. 432-205.000.
Kaeding, Warren W.: *See*—
Chu, Chin-Chiun; and Kaeding, Warren W., 4,486,616, Cl. 585-466.000.
Kagoroku, Nobuo: *See*—
Maruyama, Teruo; Yamauchi, Shinya; and Kagoroku, Nobuo, 4,486,158, Cl. 418-39.000.
Kaiser Aluminum & Chemical Corporation: *See*—
Deschapelles, Jorge B.; and Halar, Mark J., 4,486,509, Cl. 428-582.000.

Kaiser, Roman: *See*—
Lamparsky, Dietmar; and Kaiser, Roman, 4,486,337, Cl. 252-522.00R.

Kajiyama, Ryuichi: *See*—
Tachino, Kanzo; and Kajiyama, Ryuichi, 4,485,895, Cl. 187-29.00R.

Kakimura, Toshihide: *See*—
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kume, Toshiaki; and Kakimura, Toshihide, 4,485,750, Cl. 112-158.00E.

Kakinuma Kinzoku Seiki Co. Ltd.: *See*—
Kato, Shuichiro; Yabu, Yoshinori; and Kinoshita, Yoshihiro, 4,485,643, Cl. 62-519.000.

Kako, Saburo: *See*—
Arai, Taiji; and Kako, Saburo, 4,486,217, Cl. 71-25.000.

Kaltenbach & Voight GmbH & Co.: *See*—
Eibofner, Eugen; and Strohmaier, Ernst, 4,486,174, Cl. 433-104.000.

Kambara, Koji: *See*—
Gocho, Nagahiro; Tojiki, Hitomi; Hayashi, Asao; Kambara, Koji; and Nobuto, Toru, 4,486,787, Cl. 358-296.000.

Kamberg, Eduard, to New Super Laundry Mach. Co., Inc. Flat work ironing roll with stress relieving axial expansion support. 4,485,573, Cl. 38-44.000.

Kameda, Yukihiko: *See*—
Horii, Satoshi; Kameda, Yukihiko; and Fukase, Hiroshi, 4,486,602, Cl. 564-360.000.

Kametaka, Shigeru: *See*—
Yoshida, Akiyoshi; Kametaka, Shigeru; and Hayashi, Shin'ichi, 4,486,330, Cl. 252-174.120.

Kamide, Kenji; Okajima, Kunihiko; and Matsui, Toshihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Mesophase dope containing cellulose derivative and inorganic acid. 4,486,119, Cl. 106-177.000.

Kamigaito, Osami; Doi, Haruo; and Fukushima, Yoshiaki, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Clay mineral sheet. 4,486,235, Cl. 106-287.120.

Kamino, Tetsuhide: *See*—
Iizuka, Kinji; Kamino, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, 4,486,597, Cl. 562-455.000.

Kaminski, David G., to Sperry Corporation. Microprocessor parallel additive execution of a computer count ones instruction. 4,486,848, Cl. 364-715.000.

Kaminski, Joan M.: *See*—
Horodysky, Andrew G.; and Kaminski, Joan M., 4,486,321, Cl. 252-46.300.
Horodysky, Andrew G.; and Kaminski, Joan M., 4,486,322, Cl. 252-48.200.
Horodysky, Andrew G.; and Kaminski, Joan M., 4,486,323, Cl. 252-48.400.

Kamio, Takaki: *See*—
Kurauchi, Toshio; Takahashi, Hidero; Sato, Shigeyuki; Murase, Makoto; Takahara, Minoru; Obi, Tamio; and Kamio, Takaki, 4,486,373, Cl. 264-142.000.

Kamiya, Fumio; and Nodera, Hisatoshi, to Omron Tateisi Electronics Co. Electrostatic proximity switch. 4,486,811, Cl. 361-280.000.

Kamiya, Kazuhiro: *See*—
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; and Mori, Toshihito, 4,486,418, Cl. 424-180.000.

Kamiya, Michihiko: *See*—
Kojima, Yasuhumi; Yoshimi, Akiro; Kamiya, Michihiko; Ootsuka, Fumio; and Matsushima, Takeo, 4,486,837, Cl. 364-424.000.

Kamiya, Shigeru: *See*—
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,485,622, Cl. 60-296.000.

Kamiyama, Toshihiro: *See*—
Saka, Tsutomu; Kamiyama, Toshihiro; Endo, Hiroyuki; and Ikenoue, Yutaka, 4,485,770, Cl. 123-90.390.

Kamp, Anthony W.; and Feenstra, Robijn, to Shell Oil Company. Downhole motor and method for directional drilling of boreholes. 4,485,879, Cl. 175-61.000.

Kampe, Wolfgang: *See*—
Friebe, Walter-Gunar; Kampe, Wolfgang; Roesch nee Apostolides, Androniki; and Schaumann, Wolfgang, 4,486,442, Cl. 424-267.000.

Kanai, Seita: *See*—
Takata, Naoto; and Kanai, Seita, 4,486,030, Cl. 280-689.000.

Kanai, Tsutomu; and Kizaki, Yoshio, to Clarion Co., Ltd. Address check system. 4,486,883, Cl. 371-67.000.

Kanbe, Junichiro: *See*—
Misumi, Teruo; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Shirai, Shigeru, 4,486,521, Cl. 430-65.000.

Kanda, Mutsumi; Nakanishi, Kiyoshi; and Inoue, Tokuta, to Toyota Jidosha Kabushiki Kaisha. Helically-shaped intake port of an internal-combustion engine. 4,485,773, Cl. 123-188.00M.

Kanda, Mutsumi; Nakanishi, Kiyoshi; Okumura, Takeshi; Kotani, Takeshi; and Inoue, Tokuta, to Toyota Jidosha Kabushiki Kaisha. Helically-shaped intake port of an internal-combustion engine. 4,485,774, Cl. 123-188.00M.

Kanda, Mutsumi; Nakanishi, Kiyoshi; Okumura, Takeshi; Kotani, Takeshi; and Inoue, Tokuta, to Toyota Jidosha Kabushiki Kaisha. Helically-shaped intake port of an internal-combustion engine. 4,485,775, Cl. 123-188.00M.

Kane, Brian T.; and Mum, Richard J. Golfer's practice swing device. 4,486,020, Cl. 273-191.00R.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Fujita, Tamio; and Nagoshi, Fumiya, 4,486,569, Cl. 525-80.000.
Fushiki, Yasuo; Oizumi, Masayuki; Abe, Masaharu; and Watanabe, Makoto, 4,486,505, Cl. 428-416.000.
Miyashita, Shunitsu; and Somemiya, Akiyoshi, 4,486,568, Cl. 525-63.000.

Kang, Chuhong: *See*—
Guertin, Raymond J.; Kang, Chuhong; and Matthews, Peter P., 4,485,594, Cl. 51-165.710.

Kanter, Irving: *See*—
Peregrim, Theodore J.; Kanter, Irving; and Mangiapane, Rosario, 4,486,756, Cl. 343-16.00M.

Kanto Denka Kogyo Co. Ltd.: *See*—
Hara, Kenkichi; Yokoe, Shigeo; Oka, Kazuyoshi; Murakami, Tamotsu; and Hashimoto, Tsugifusa, 4,486,502, Cl. 428-405.000.

Kantwerk, Karl-Heinz. Combination scissor hammer tool. 4,485,507, Cl. 7-135.000.

Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Okamoto, Shigeo; and Shiozaki, Tomoharu, 4,486,762, Cl. 346-207.000.

Kao Corporation: *See*—
Ootani, Naoteru; Ishii, Takashi; and Ikeda, Hiroshi, 4,486,338, Cl. 252-545.000.

Kao Soap Co, Ltd.: *See*—
Abe, Yoshiaki; and Watanabe, Hiroshi, 4,486,406, Cl. 424-70.000.

Karas, Jim S., Jr. Method of playing a naval maneuvering game. 4,486,021, Cl. 273-255.000.

Karijuku, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Synchronous signal generator. 4,486,892, Cl. 377-43.000.

Karns, Phil J., to Carrier Corporation. Adjustable heat exchanger air bypass for humidity control. 4,485,642, Cl. 62-515.000.

Kasei Optonix, Ltd.: *See*—
Maeoka, Hidehiko; Shimizu, Etsuo; Suzuki, Yujiro; Shimiya, Keiji; and Miura, Norio, 4,486,486, Cl. 428-212.000.

Kashimura, Yuichi, to Hitachi, Ltd. Air-fuel ratio control apparatus. 4,485,786, Cl. 123-440.000.

Kasper, Gary A., to Rexair, Inc. Wet-dry vacuum cleaning apparatus. 4,485,518, Cl. 15-322.000.

Kassamali, Ali: *See*—
Murphy, Alan P.; Kassamali, Ali; and Curry, John D., 4,486,327, Cl. 252-94.000.

Kassebohm, Borchert: *See*—
Marnet, Chrysanth; and Kassebohm, Borchert, 4,486,388, Cl. 422-178.000.

Kastan, Howard: *See*—
Swan, William C.; and Kastan, Howard, 4,485,702, Cl. 81-98.000.

Kasugai, Masakuni, to Tokai Electric Wire Company, Ltd. Waterproof connector. 4,486,062, Cl. 339-91.00R.

Katahira, Yoshihiro: *See*—
Endo, Kaichi; Katahira, Yoshihiro; Hayashi, Eiichi; and Nakano, Satoshi, 4,486,100, Cl. 366-76.000.

Kataoka, Hiroyuki, to Fuji Xerox Co., Ltd. Character and picture reading device. 4,486,655, Cl. 250-211.00R.

Kato, Hiroaki: *See*—
Nonomura, Keisaku; Matsuura, Masataka; Uede, Hisashi; Kishi, Kohhei; and Kato, Hiroaki, 4,486,748, Cl. 340-756.000.

Kato, Ichiro: *See*—
Ito, Takashi; and Kato, Ichiro, 4,486,461, Cl. 427-38.000.

Kato, Masaaki; and Akashi, Tetsuji, to Nippondenso Co., Ltd. Fuel injection system. 4,485,787, Cl. 123-446.000.

Kato, Shuichiro; Yabu, Yoshinori; and Kinoshita, Yoshihiro, to Nippon Aluminium Mfg. Co. Ltd., The; Kabushiki Kaisha Toshiba; and Kakinuma Kinzoku Seiki Co. Ltd. Evaporator for refrigerators and the like. 4,485,643, Cl. 62-519.000.

Kato, Tetso; Miura, Ieaki; Ashiba, Masahiro; and Imaizumi, Tomio, to Tokico Ltd. Damping force generating mechanism in hydraulic damper. 4,485,900, Cl. 188-282.000.

Kato, Yoshio: *See*—
Tsukada, Ichiro; Kato, Yoshio; and Sakai, Tadashi, 4,486,170, Cl. 431-315.000.

Katsnelson, Lev A.: *See*—
Emanuel, Nikolai M.; Shvedova, Anna A.; Smirnov, Leonid D.; Spirina, Larisa V.; and Katsnelson, Lev A., 4,486,440, Cl. 424-263.000.

Katsuyama Kinzoku Kogyo Kabushiki Kaisha: *See*—
Sugimoto, Mutsumi, 4,485,986, Cl. 242-107.40A.

Katzfey, James M.: *See*—
Pellerin, Norvin L.; Katzfey, James M.; and Garcia, Daniel P., 4,485,509, Cl. 8-158.000.

Kaufman, Charles E.; Shetler, Marvin R.; and Sharp, William M., to Restroom Facilities Corporation. Prefabricated, self-contained building and method of construction. 4,485,608, Cl. 52-745.000.

Kawaguchi, Keisuke: *See*—
Yamamoto, Hiroshi; Motomura, Masaki; and Kawaguchi, Keisuke, 4,485,650, Cl. 72-12.000.

Kawaguchi, Kizo; and Matsuda, Teruo, to Osaka Seiki Kabushiki Kaisha. Machine for superfinishing annular workpieces. 4,485,592, Cl. 51-58.000.

Kawaguchi, Takeshi; and Seki, Masayuki, to Honda Giken Kogyo Kabushiki Kaisha. Disc brake system. 4,485,897, Cl. 188-73.390.

Kawahira, Hiroto: *See*—
Yasuda, Mitsuo; Nishizawa, Toshizo; Yuchi, Kazuhide; Kawahira, Hiroto; and Nagatomo, Hideaki, 4,485,634, Cl. 62-196.200.

Kawai, Hisasi: *See*—
Moriguchi, Koichi; Iwamoto, Kenzi; Kawai, Hisasi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,485,626, Cl. 60-602.000.

Kawamatsu, Yutaka; Fujita, Takeshi; and Yamamoto, Yujiro, to Takeda Chemical Industries, Ltd.; and Senju Pharmaceutical Co., Ltd. Thiazolidine derivatives and production thereof. 4,486,594, Cl. 548-183.000.

Kawamoto, Hideo; and Uehara, Seigo, to Sony Corporation. Tape guide device for video tape recorder. 4,486,799, Cl. 360-130.230.
Kawamoto, Mutsumi, to Aisin-Warner Kabushiki Kaisha. Control apparatus for automatic transmissions. 4,485,695, Cl. 74-869.000.
Kawamura Institute of Chemical Research: *See*—
Hashimoto, Yutaka, 4,486,391, Cl. 423-9.000.
Kawamura, Takahide: *See*—
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,485,772, Cl. 123-179.00B.
Kawate, Keith W.; and Haug, John A., to Texas Instruments Incorporated. Universal single phase motor starting control apparatus. 4,486,700, Cl. 318-781.000.
Kawazoe, Takashi: *See*—
Okumoto, Tadaoki; Sugimoto, Masatoshi; Kawazoe, Takashi; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Funato, Kenichi, 4,486,480, Cl. 428-36.000.
Kazino, Hiroshi, to Kabushiki Kaisha Aoyama Seisakusho. Tapping screw. 4,486,135, Cl. 411-387.000.
Kelleher, Kevin C., to RCA Corporation. Video disc player having lifter driving circuit. 4,486,875, Cl. 369-170.000.
Kelleher, Kevin C.: *See*—
Hackett, Charles P.; Brauer, Eric A.; Kelleher, Kevin C.; and Wright, Richard R., 4,486,872, Cl. 369-71.000.
Keller, Claude E., Jr. Puzzle and transparent container therefore. 4,486,018, Cl. 273-157.00R.
Kelley Company, Inc.: *See*—
Erlandsson, Kjell I., 4,485,746, Cl. 110-234.000.
Kelley, William J.: *See*—
Halford, Wayne R.; and Kelley, William J., 4,485,586, Cl. 446-448.000.
Kelvin E. Lord & Co.: *See*—
Begley, Maxwell G.; and Munslow-Davies, Keith, 4,485,530, Cl. 24-270.000.
Kemeny, George A., to Westinghouse Electric Corp. Parallel rail electromagnetic launcher with multiple current path armature. 4,485,720, Cl. 89-8.000.
Kemp, David M.: *See*—
Dulian, Robert J.; Kemp, David M.; Jones, Hartl R.; and Conway, Raymond J., 4,485,856, Cl. 141-198.000.
Kemper, Dennis: *See*—
Posiviata, Richard W.; Kemper, Dennis; and Westhoff, William L., 4,486,183, Cl. 474-94.000.
Kenjo, Susumu; Shimahara, Minoru; and Gokyu, Toshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Solid insulator and electric equipment coil using the same. 4,486,506, Cl. 428-475.200.
Kenmotsu, Isami: *See*—
Takahashi, Hideyuki; Kenmotsu, Isami; Okajima, Takahiro; and Takahashi, Yoshio, 4,486,873, Cl. 369-77.100.
Kennedy, John F.: *See*—
Fournier, Alain M.; and Kennedy, John F., 4,485,970, Cl. 239-265.290.
Kennedy, Joseph P., to University of Akron. Synthesis of amphiphilic block copolymers and networks. 4,486,572, Cl. 525-283.000.
Kennedy, William J.; and Beucus, A. John, to Beu-Tex Corporation. Apparatus for continuously treating staple length textile fibrous materials. 4,485,644, Cl. 68-5.00D.
Kenworthy, David M. A.: *See*—
Bridgstock, Eric; Kenworthy, David M. A.; Glaves, Brian; and Bilton, David A., 4,486,650, Cl. 219-544.000.
Kenworthy, Milton J., to General Electric Company. Combustor liner. 4,485,630, Cl. 60-757.000.
Kenyhercz, Thomas M., to Janssen Pharmaceutica Inc. Stable fentanyl composition. 4,486,423, Cl. 424-267.000.
Keogh, Andrew J.: *See*—
Nguyen, Kien L.; Keogh, Andrew J.; and Covey, Geoffrey H., 4,486,394, Cl. 423-155.000.
Kerekes, Peter S.; Kaddis, Wagdi; and Hallal, Alfred J. Non-ricocheting armor panel. 4,486,491, Cl. 428-251.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Heitkamp, Dieter; and Wagener, Klaus, 4,486,481, Cl. 428-65.000.
Kernforschungszentrum Karlsruhe GmbH: *See*—
Heckmann, Klaus; and Spurny, Jiri, 4,486,392, Cl. 423-11.000.
Kershner, David D., to United States of America, National Aeronautics and Space Administration. Miniature electro-optical air flow sensor. 4,485,671, Cl. 73-187.000.
Kesselman, Jerome; Shelnut, James; and Wilkes, Alan, to Polychrome Corporation. Duplicating film mask with radiation absorbing benzophenone in processed positive-working radiation sensitive layer on transparent substrate. 4,486,518, Cl. 430-5.000.
Kettinger, James G., to Phillips Petroleum Company. Removing NH_3 and H_2S from aqueous streams. 4,486,299, Cl. 208-356.000.
Key Electrosonic Corporation: *See*—
Carmichael, D. Murphy; Davis, Walter L.; and Perry, Vernon L., 4,485,912, Cl. 198-382.000.
Keyes Fibre Company: *See*—
Gilley, James E.; Vigue, Henry R.; and Sanborn, Wesley C., 4,485,610, Cl. 53-452.000.
Khan, Agha M. A.: *See*—
Mattheis, Harley H.; and Khan, Agha M. A., 4,485,862, Cl. 145-3.100.
Kida, Akira: *See*—
Samejima, Masayoshi; Hirata, Goichi; Koida, Yoshiyuki; and Kida, Akira, 4,486,471, Cl. 427-213.300.
Kiddie Products, Inc.: *See*—
Panicci, Richard L., 4,485,963, Cl. 229-7.00S.
Kiel, Johnathan L.; and Everse, Johannes. Insoluble crosslinked cytotoxic oxidase-peroxidase system. 4,486,408, Cl. 424-94.000.
Kienast, Dallas R.; and Kienast, Patricia L. Composition for live fishbait coating. 4,486,460, Cl. 427-4.000.
Kienast, Patricia L.: *See*—
Kienast, Dallas R.; and Kienast, Patricia L., 4,486,460, Cl. 427-4.000.
Kieper, Joachim. Apparatus for the controlled feeding of laboratory test animals. 4,485,764, Cl. 119-18.000.
Kikuya, Satoshi; Sumisha, Hidemichi; and Minamide, Seiko, to Matsushita Electric Industrial Co., Ltd. Tape cassette. 4,485,988, Cl. 242-198.000.
Kimberley, John A.; and Bullis, Robert H., to United Technologies Diesel Systems, Inc. Method and apparatus for controlling diesel engine exhaust gas recirculation partly as a function of exhaust particulate level. 4,485,794, Cl. 123-569.000.
Kimberly-Clark Corporation: *See*—
Middleton, David L., 4,486,161, Cl. 425-7.000.
Nuttall, David A.; and Hong, Sung Ho, 4,486,268, Cl. 162-123.000.
Sigl, Wayne C., 4,486,192, Cl. 604-385.000.
Kimoto, Teruo; Yamaguchi, Yasuyuki; Nishimura, Takeji; and Mizuno, Satoshi, to Mitutoyo Mfg. Co., Ltd. Contact point type measuring device. 4,486,891, Cl. 377-24.000.
King, Eddie W.; and Hughes, Robert D., IV, to Coca-Cola Company, The. Temperature-based control for energy management system. 4,485,633, Cl. 62-180.000.
King Instrument Corporation: *See*—
Woodley, George M., 4,486,262, Cl. 156-502.000.
Kinjo, Hisao: *See*—
Wada, Yoshiyo; Kinjo, Hisao; Ueno, Ichiro; Honjo, Yoshihiko; Tatsuguchi, Kazuo; and Shikumami, Juichi, 4,486,791, Cl. 358-342.000.
Kinoshita, Makoto: *See*—
Ebata, Yoshihiro; Kose, Saburo; Kinoshita, Makoto; and Ueno, Tsutomu, 4,486,257, Cl. 156-325.000.
Kinoshita, Takao: *See*—
Tanaka, Nobuyoshi; and Kinoshita, Takao, 4,486,783, Cl. 358-213.000.
Kinoshita, Yoshihiro: *See*—
Kato, Shuichiro; Yabu, Yoshinori; and Kinoshita, Yoshihiro, 4,485,643, Cl. 62-519.000.
Kinsolving, C. Richard; and St. Georgiev, Vassil, to Pennwalt Corporation. Esters of 2-adamantanone oxime. 4,486,601, Cl. 564-254.000.
Kirichenko, Vladimir A.: *See*—
Shutov, Gennady M.; Erdman, Maya E.; Boltovsky, Valery S.; Solomakha, Adel I.; Nosevich, Alexandr F.; Pukhalsky, Miroslav E.; Kirichenko, Vladimir A.; and Derbyshkin, Valentin V., 4,486,475, Cl. 427-351.000.
Kishi, Kohhei: *See*—
Nonomura, Keisaku; Matsuura, Masataka; Uede, Hisashi; Kishi, Kohhei; and Kato, Hiroaki, 4,486,748, Cl. 340-756.000.
Kishino, Takao; Funazaki, Tadashi; and Yamaguchi, Toshihiro, to Futaba Denshi Kogyo Kabushiki Kaisha. Fluorescent display device. 4,486,749, Cl. 340-772.000.
Kisida, Hirosi; and Hatakoshi, Makoto, to Sumitomo Chemical Company, Limited. Thiocarbamate compounds, and their use. 4,486,449, Cl. 424-300.000.
Kissei Pharmaceutical Co., Ltd.: *See*—
Iizuka, Kinji; Kamino, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, 4,486,597, Cl. 562-455.000.
Kitagawa, Hiroshi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 4,485,717, Cl. 84-1.220.
Kitagawa, Kohzo: *See*—
Baba, Yasushi; Tezuka, Hirofumi; and Kitagawa, Kohzo, 4,486,820, Cl. 362-183.000.
Kitamoto, Tatsuji: *See*—
Dezawa, Shin-ichiro; Akashi, Goro; and Kitamoto, Tatsuji, 4,486,496, Cl. 428-328.000.
Kitamura, Junji; Murata, Fumiya; and Nakamura, Noboru, to Hitachi, Ltd. Data processing system providing data security through coded identification of accessing terminals. 4,486,828, Cl. 364-200.000.
Kitamura, Takashi; and Ito, Michio, to Canon Kabushiki Kaisha. Method and apparatus for electrophotography capable of changing over images from positive to negative and vice versa. 4,486,088, Cl. 355-3.0CH.
Kitamura, Toshio: *See*—
Tozawa, Seiichi; Sugimoto, Seii; and Kitamura, Toshio, 4,486,512, Cl. 428-623.000.
Kitayama, Takeo: *See*—
Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, 4,485,776, Cl. 123-198.00F.
Kiwala, Jacob: *See*—
Klemarczyk, Philip T.; Dekker, Lambert; and Kiwala, Jacob, 4,485,828, Cl. 131-276.000.
Kiya, Nobuyuki: *See*—
Nozawa, Ryoichiro; and Kiya, Nobuyuki, 4,486,741, Cl. 340-365.00R.
Kizaki, Yoshio: *See*—
Kanai, Tsutomu; and Kizaki, Yoshio, 4,486,883, Cl. 371-67.000.
Kjohl, Olav; Brekke, Ellen; and Egner, Arne O., to Norsk Hydro a.s. Stabilized ammonium nitrate or stabilized products having a high content of ammonium nitrate, and method of producing such products. 4,486,396, Cl. 423-265.000.
Klaiss, Dieter, to Peri-Werk Artur Schworer GmbH & Co. KG. Formwork system for concrete floors comprising a floor joist. 4,486,000, Cl. 249-23.000.

Klaus, Kaspar. Device for the parking of automobiles. 4,486,140, Cl. 414-229.000.

Kleemann, Axel; Lehmann, Bernd; and Deller, Klaus, to Degussa Aktiengesellschaft. Process for the production of β-hydroxy-α-aminocarboxylic acids. 4,486,600, Cl. 562-567.000.

Klein, Dean A.; Davis, Steven C.; Wroblewski, Jerome J.; Baade, Otto; and Hinrichs, Earl L., to Houdaille Industries, Inc. Computer numeric control for metal forming. 4,486,840, Cl. 364-474.000.

Klein, Robert W., to William H. Rorer, Inc. Pigmented cosmetic vehicle containing a mixture of alkoxylated surfactants. 4,486,405, Cl. 424-59.000.

Kleinewefers GmbH: *See*—
Piesen, Stephan; and Zajec, Joze, 4,485,612, Cl. 53-504.000.

Klemarczyk, Philip T.; Dekker, Lambert; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Use of substituted methyl isopropyl cyclohexenones in augmenting or enhancing the aroma or taste of smoking tobacco compositions and smoking tobacco article components. 4,485,828, Cl. 131-276.000.

Klemmer, Paul J.; and Daul, Michael J., to Appleton Machine Company. Four column positioning mechanism for calender machines. 4,485,734, Cl. 100-168.000.

Klesper, Hugo: *See*—
Busse, Oswald; and Klesper, Hugo, 4,486,306, Cl. 210-230.000.

Klie, Jurgen; and Wellendorf, Klaus, to Rudolf Hell GmbH. Method and circuit arrangement for partial correction of the delineation in color image reproduction. 4,486,772, Cl. 358-80.000.

Kliemann, Bruno; and Stoll, Martin, to Rhodia AG. Process and apparatus for the preparation of electret filaments, textile fibers and similar articles. 4,486,365, Cl. 264-24.000.

Kloser, Irving I. Water saving flush tank mechanism. 4,485,501, Cl. 4-324.000.

Klubitschko, Gerd, to Marker-Patentverwertungsgesellschaft mbH. Heel grip with pedal operated ski brake for rotary ski binding. 4,485,536, Cl. 280-605.000.

Knickerbocker Company, The: *See*—
Soule, Eugene A.; Taylor, William L.; and Walker, Robert H., 4,485,894, Cl. 187-9.00E.

Knighten, Charles A.: *See*—
Norlie, Bruce D.; and Knighten, Charles A., 4,485,857, Cl. 144-3.00R.

Knoblauch, Jack R.: *See*—
Beukema, Duane M.; and Knoblauch, Jack R., 4,485,996, Cl. 248-407.000.

Knomark, Inc.: *See*—
Melville, Douglas F., Jr., 4,485,500, Cl. 4-228.000.

Knott, Christine A.; and Ryan, Joyce, to Colgate-Palmolive Company. Betaine-soap shampoo composition. 4,486,328, Cl. 252-117.000.

Kobashi, Kiyoshi: *See*—
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,485,622, Cl. 60-296.000.

Kobayashi, Hiroaki: *See*—
Asakura, Toshiyuki; Kobayashi, Hiroaki; and Noguchi, Yukio, 4,486,578, Cl. 525-535.000.

Kobayashi, Nobuyuki; Abe, Yoritsune; Shibata, Katuo; and Watanabe, Yukio, to Hitachi, Ltd. Vacuum heat insulator. 4,486,482, Cl. 428-69.000.

Kobayashi, Shunichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Power flow direction detector. 4,486,706, Cl. 324-133.000.

Kobayashi, Yoshiki; Maejima, Hideo; Bandoh, Tadaaki; and Nakanishi, Hiroaki, to Hitachi, Ltd. Multi-computer system having dual common memory. 4,486,834, Cl. 364-200.000.

Kobinger, Walter: *See*—
Hurnaus, Rudolf; Grias, Gerhart; Sauter, Robert; Grell, Wolfgang; Kobinger, Walter; and Pichler, Ludwig, 4,486,433, Cl. 424-250.000.

Koch, Ulf: *See*—
Schrotz, Kurt; and Koch, Ulf, 4,486,258, Cl. 156-384.000.

Koch, Ulrich; Plotz, Peter; Konig, Dieter; Langer, Jochen; Switaiski, Burkhardt; Schindler, H. Heinrich; and Wesselski, Willi, to Blohm & Voss AG. Underwater pipe laying vessel. 4,486,123, Cl. 405-169.000.

Kockums Industri AB: *See*—
Nilsson, Philip, deceased; Eklund, Urban; and Gaslander, Jan-Erik, 4,485,861, Cl. 144-357.000.

Kodera, Masao; and Akita, Sigeyuki, to Nippon Soken, Inc. Ultrasonic wave conversion apparatus. 4,486,868, Cl. 367-140.000.

Koeneke, Conrad J.; Lepselter, Martin P.; and Lynch, William T., to AT&T Bell Laboratories. Fabrication of schottky-barrier MOS FETs. 4,485,550, Cl. 29-571.000.

Koenig, Robert J.; and Stevens, Leonard W., to United Technologies Corporation. Coolable stator assembly for a gas turbine engine. 4,485,620, Cl. 60-39.750.

Koerner, Gotz: *See*—
Fritsch, Herwig; Koerner, Gotz; Quilitsch, Herbert; and Schamberg, Eckehard, 4,486,476, Cl. 427-387.000.

Koguchi, Yoji: *See*—
Sugimoto, Hiroyuki; Fukaya, Kazuo; and Koguchi, Yoji, 4,486,545, Cl. 501-123.000.

Kogure, Tsuneo: *See*—
Koyama, Katsumi; Kojima, Shigenori; Kogure, Tsuneo; Itano, Naoaki; and Ohashi, Yoshihiko, 4,486,841, Cl. 364-474.000.

Koguro, Toshio: *See*—
Hashimoto, Kenshiro; Okazaki, Kunio; Tanabe, Toru; and Koguro, Toshio, 4,486,818, Cl. 362-65.000.

Kohler, Joylee E., to AT&T Technologies, Inc. Method of and system for limiting access to a group of telephone trunks. 4,486,626, Cl. 179-18.0DA.

Kohn, Herbert: *See*—
Behnk, Gunter; Kohn, Herbert; and Pinkerneil, Gunther, 4,485,525, Cl. 17-55.000.

Koida, Yoshiyuki: *See*—
Samejima, Masayoshi; Hirata, Goichi; Koida, Yoshiyuki; and Kida, Akira, 4,486,471, Cl. 427-213.300.

Koike, Eishi, to Ozen Corporation. Continuous repeating type simplified sound reproducing device. 4,486,871, Cl. 369-67.000.

Koike, Hideharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Flip-flop circuit. 4,486,673, Cl. 307-279.000.

Koike, Tatsuhiro, to Nippon Gakki Seizo Kabushiki Kaisha. Method of processing performance data. 4,485,716, Cl. 84-1.030.

Koivunen, Erkki A., to General Motors Corporation. Centrifugal actuated friction clutch with a hydraulic apply piston. 4,485,903, Cl. 192-86.000.

Kojima, Shigenori: *See*—
Koyama, Katsumi; Kojima, Shigenori; Kogure, Tsuneo; Itano, Naoaki; and Ohashi, Yoshihiko, 4,486,841, Cl. 364-474.000.

Kojima, Yasuhumi; Yoshimi, Akiro; Kamiya, Michihiko; Ootsuka, Fumio; and Matsushima, Takeo, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for controlling operation of automobile air conditioner. 4,486,837, Cl. 364-424.000.

Kojima, Yoshitaka: *See*—
Asahi, Naotatsu; Yamaguchi, Shizuka; Kojima, Yoshitaka; and Terakado, Katsuyoshi, 4,486,462, Cl. 427-39.000.

Kokusan Kinzoku Kogyo Co., Ltd.: *See*—
Mochida, Haruo; and Namazue, Hirotoshi, 4,486,806, Cl. 361-172.000.

Kolb, Erich: *See*—
Wiesenberger, Alfred; Kolb, Erich; and Engelhardt, Iris, 4,486,413, Cl. 424-177.000.

Koll, Laurel A., to E & K Corporation. Method and apparatus for collecting and/or growing protected biological specimens. 4,485,824, Cl. 128-756.000.

Koller, Hans; and Zingel, Heinz, to Ciba-Geigy Corporation. Apparatus for the application of an adhesive tape about the edge of a shaped part of sheet metal. 4,486,261, Cl. 156-461.000.

Kollmorgen Technologies Corporation: *See*—
Leech, Edward J.; and Russo, Frank D., 4,486,466, Cl. 427-96.000.
Tardieu, Pierre R.; and Mulet-Marquis, Yves H., 4,486,176, Cl. 433-133.000.

Komaba, Yuichi: *See*—
Sugimoto, Tatsuo; Shigyo, Seiji; Takashima, Kazutoshi; and Komaba, Yuichi, 4,485,957, Cl. 228-4.500.

Komatsu, Hiroyuki: *See*—
Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, 4,485,776, Cl. 123-198.00F.

Komet Stahlhalter-und Werkzeugfabrik, Robert Breuning, GmbH: *See*—
Eckle, Otto, 4,486,131, Cl. 408-185.000.

Komet Stahlhalter- und Werkzuegfabrik, Robert Breuning GmbH: *See*—
Eckle, Otto, 4,486,127, Cl. 407-114.000.

Komossa, Werner; Barck, Hans-Adolf; and Bahr, Thomas, to Hauni-Werke Korber & Co. KG. Apparatus for recovering tobacco from unsatisfactory cigarettes or the like. 4,485,827, Cl. 131-84.00C.

Kondo, Shinichi: *See*—
Umezawa, Hamao; and Kondo, Shinichi, 4,486,419, Cl. 424-180.000.

Konejukka Oy: *See*—
Sassi, Kari, 4,486,116, Cl. 403-367.000.

Konig, Dieter: *See*—
Koch, Ulrich; Plotz, Peter; Konig, Dieter; Langer, Jochen; Switaiski, Burkhardt; Schindler, H. Heinrich; and Wesselski, Willi, 4,486,123, Cl. 405-169.000.

Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, to Sumitomo Chemical Company, Limited. Diphenyl sulfone compounds, and use. 4,486,223, Cl. 71-103.000.

Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, to Sumitomo Chemical Company, Limited. Diphenyl sulfone compounds. 4,486,604, Cl. 568-33.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; Funaki, Hirozo; Seimaya, Ryubun; Yamada, Yutaka; Tomono, Makoto; and Tarumi, Noriyoshi, 4,486,524, Cl. 430-109.000.
Itakura, Haruo, 4,486,821, Cl. 363-18.000.
Itaya, Masahiko; Haneda, Satoshi; and Okamoto, Yukio, 4,486,089, Cl. 355-3.0DD.
Koyama, Mikio; and Okaniwa, Kenichiro, 4,486,537, Cl. 436-170.000.
Murata, Hideki; Terada, Sadatugu; Tamaki, Kiyoshi; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, 4,486,559, Cl. 523-468.000.

Konno, Akira, to Canon Kabushiki Kaisha. Pattern generating apparatus capable of generating patterns by controlling basic symbols. 4,486,745, Cl. 340-734.000.

Kopf, Gerhard, to Aktien-Gesellschaft der Dillinger Huttenwerks. Apparatus for cooling sheet metal panels. 4,486,009, Cl. 266-114.000.

Koppelmann, Edgar; Krapp, Gerd; Schumann, Klaus; and Smolka, Heinz G., to Henkel Kommanditgesellschaft auf Aktien. Process for the handling of waste waters. 4,486,314, Cl. 210-714.000.

Kordomenos, Panagiotis I.; and Kurple, Kenneth R., to Ford Motor Company. Thermosetting coating composition comprising polymeric catalyst-II. 4,486,555, Cl. 523-400.000.
Kordomenos, Panagiotis I.; and Kurple, Kenneth R., to Ford Motor Company. Thermosetting coating composition-III. 4,486,556, Cl. 523-400.000.
Korhonen-Wesala, Veikko. Diaphragm pump. 4,486,151, Cl. 417-222.000.
Kormendy, Attila: *See*—
Adonyi, Ivan; Farkas, Endre; Hegedus, Gyula; Kormendy, Attila; Mogyorosi, Istvanne ; Molnar, Geza; Sass, Szilard; Scholler, Laszlo ; Takaca, Lajos; and Vitez, Gyorgy, 4,486,825, Cl. 364-200.000.
Korosec, Philip S., to Edwin Cooper, Inc. Hydraulic fluids. 4,486,324, Cl. 252-49.300.
Korsunsky, Iosif: *See*—
Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,486,061, Cl. 339-75.0MP.
Kose, Saburo: *See*—
Ebata, Yoshihiro; Kose, Saburo; Kinoshita, Makoto; and Ueno, Tsutomu, 4,486,257, Cl. 156-325.000.
Kosswig, Kurt: *See*—
Balzer, Dieter; and Kosswig, Kurt, 4,485,873, Cl. 166-274.000.
Koster, Waldemar: *See*—
Huber, Reinhold; and Koster, Waldemar, 4,486,118, Cl. 404-56.000.
Kotani, Takeshi: *See*—
Kanda, Mutsumi; Nakanishi, Kiyoshi; Okumura, Takeshi; Kotani, Takeshi; and Inoue, Tokuta, 4,485,774, Cl. 123-188.00M.
Kanda, Mutsumi; Nakanishi, Kiyoshi; Okumura, Takeshi; Kotani, Takeshi; and Inoue, Tokuta, 4,485,775, Cl. 123-188.00M.
Kotula, Frank: *See*—
Amplatz, Kurt; and Kotula, Frank, 4,485,815, Cl. 128-329.00R.
Kovacic, Guido: *See*—
Boie, Immo; Kovacic, Guido; and Osegowitsch, Victor, 4,486,085, Cl. 354-312.000.
Kovats, Ferenc: *See*—
Szego , Andras; Kovats, Ferenc; Peterdi, Viktoria; Bone , Istvan; Gombos, Laszlo ; Oz, Ferenc; and Simon, Imre, 4,486,595, Cl. 548-306.000.
Kowa Company, Ltd.: *See*—
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; and Mori, Toshihito, 4,486,418, Cl. 424-180.000.
Kowal, Samuel J., to Owens-Illinois, Inc. Torque limited cap applicating head. 4,485,609, Cl. 53-331.500.
Kowalski, Joseph W.; and Cunneen, Charles N., to B-Line Systems, Inc. Spring hanger. 4,485,998, Cl. 248-561.000.
Kowalski, Ronald C.: *See*—
Newman, Neil F.; and Kowalski, Ronald C., 4,486,575, Cl. 525-356.000.
Koyama, Arata: *See*—
Nakata, Kazuo; Ishikawa, Tsuneo; Honma, Ichiro; Koyama, Arata; Hirai, Masaharu; and Amano, Masatoshi, 4,486,467, Cl. 427-129.000.
Koyama, Katsumi; Kojima, Shigenori; Kogure, Tsuneo; Itano, Naoaki; and Ohashi, Yoshihiko, to Amada Company, Limited. Bending press. 4,486,841, Cl. 364-474.000.
Koyama, Mikio; and Okaniwa, Kenichiro, to Konishiroku Photo Industry Co., Ltd. Analytical element and method of use. 4,486,537, Cl. 436-170.000.
Kozinda, Zinaida J.: *See*—
Gorbacheva, Irina N.; Sukhova, Ljudmila M.; Kozinda, Zinaida J.; Molokov, Vladislav L.; Antonov, Lev T.; Simonov, Vadim D.; Chertov, Viktor A.; Dvoskin, Semen I.; and Veseneva, Raisa S., 4,486,347, Cl. 534-797.000.
Kraftwerk Union Aktiengesellschaft: *See*—
Rau, Peter; and Schatz, Manfred, 4,486,384, Cl. 376-353.000.
Krainer, Erich: *See*—
Diefenbach, Gerhard; and Krainer, Erich, 4,486,697, Cl. 318-703.000.
Krake, Friedhelm: *See*—
Muth, Peter; Hartung, Wolfgang; Krake, Friedhelm; and Furche, Marion, 4,485,688, Cl. 74-473.00R.
Krallmann, Reinhold: *See*—
Becker, Ernst; Bergmann, Udo; Degen, Helmut; Hansen, Guenter; and Krallmann, Reinhold, 4,486,198, Cl. 8-639.000.
Kranz, Jurgen, to Metzeler Kautschuk GmbH. Method and device for continuously applying a decorative strip to a rubber profile or section. 4,486,256, Cl. 156-257.000.
Krapp, Gerd: *See*—
Koppelmann, Edgar; Krapp, Gerd; Schumann, Klaus; and Smolka, Heinz G., 4,486,314, Cl. 210-714.000.
Kratz, Jay L.: *See*—
Sagan, Stanley S.; and Kratz, Jay L., 4,485,960, Cl. 228-107.000.
Krause, Werner; and Pieper, Werner, to Hoechst Aktiengesellschaft. Process for making vinylphosphonic acid or vinylpyrophosphonic acid. 4,486,357, Cl. 260-502.40R.
Krejcik, Peter. Safety arrangement for precious objects. 4,485,916, Cl. 206-45.340.
Kresock, John M., to Eastman Kodak Company. Electronic flash apparatus. 4,486,086, Cl. 354-413.000.
Krist, Otto; and Salzburg, Herbert, to Bayer Aktiengesellschaft. Enamel frit and a one-bake two- and multilayer enamelling process. 4,486,542, Cl. 501-17.000.
Krodel, Leander. Sludge shovel apparatus. 4,486,309, Cl. 210-525.000.
Krogstad, James D.; and Wulff, Thomas J., to Shopsmith, Inc. Planer chip removal system. 4,485,859, Cl. 144-252.00R.
Krol, Thijs: *See*—
Piret, Philippe M. O. A.; and Krol, Thijs, 4,486,882, Cl. 371-45.000.
Kroner, Ulrich: *See*—
von Raven, Axel; Bucki, Hans; and Kroner, Ulrich, 4,486,216, Cl. 71-8.000.
Kruckei, Peter; and Winkler, Wolfgang, to Schwan-Stabilo Schwanhausser GmbH & Co. Pencil for cosmetic purposes. 4,486,110, Cl. 401-96.000.
Krumme, John F., to Alchemia. Shape-memory surgical staple apparatus and method for use in surgical suturing. 4,485,816, Cl. 128-334.00R.
Krupp-Koppers GmbH: *See*—
Jokisch, Friedrich, 4,486,269, Cl. 201-1.000.
Krupp MaK Maschinenbau GmbH: *See*—
Schmitt, Josef, 4,485,669, Cl. 73-167.000.
Krupp Polysius AG: *See*—
Weber, Rudolf; and Riedel, Horst, 4,485,684, Cl. 73-863.120.
Krutsch, John R.: *See*—
Barlow, Gordon A.; and Krutsch, John R., 4,485,587, Cl. 446-442.000.
Krywiczanin, Wladyslaw H.; and Lumsden, William, to British-American Tobacco Company Limited. Feeding web material. 4,485,981, Cl. 242-57.000.
Kubo, Keishi: *See*—
Kurisu, Norio; Matsuda, Tsutomu; Shimada, Masaru; and Kubo, Keishi, 4,486,527, Cl. 430-158.000.
Kubota, Yuzuru: *See*—
Okuyama, Toshiaki; Kubota, Yuzuru; and Nagase, Hiroshi, 4,486,824, Cl. 363-41.000.
Kudo, Michio; Fukami, Tatsuo; and Hayashibe, Rinpei, to Marukokeihouki Co. Ltd. Multifrequency piezoelectric horn system. 4,486,742, Cl. 340-384.00E.
Kuelzer, Peter, to Siemens Aktiengesellschaft. Exchangeable transportation device for marginally perforated data carriers. 4,485,950, Cl. 226-74.000.
Kuhla, Donald E.: *See*—
Studt, William L.; Kuhla, Donald E.; Chou, Billy J.; and Yelnosky, John, 4,486,439, Cl. 424-263.000.
Kuhlein, Klaus: *See*—
Bauer, Wolfgang; Kuhlein, Klaus; and Nagl, Gert, 4,486,350, Cl. 260-245.860.
Kuhlman, Clare, to Intercontinental Engineering-Manufacturing Corporation. Emergency pawl release system for winches. 4,486,007, Cl. 254-376.000.
Kuhn, Fritz: *See*—
Erdmann, Jurgen; and Kuhn, Fritz, 4,486,656, Cl. 250-214.00R.
Kulikov, Vladimir L.: *See*—
Pigalev, Evgeny Y.; Pavlov, Juvenaly V.; Osipov, Alexandr S.; and Kulikov, Vladimir L., 4,485,615, Cl. 57-261.000.
Kulprathipanja, Santi, to UOP Inc. Adsorbent for the extraction of sucrose. 4,486,548, Cl. 502-404.000.
Kulprathipanja, Santi; and Neuzil, Richard W., to UOP Inc. Process for separating C_6 olefin hydrocarbons. 4,486,618, Cl. 585-829.000.
Kume, Toshiaki: *See*—
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kume, Toshiaki; and Kakimura, Toshihide, 4,485,750, Cl. 112-158.00E.
Kunde, Klaus, to Bayer Aktiengesellschaft. Cationic triazine azo dyes. 4,486,348, Cl. 534-741.000.
Kunii, Hisayoshi: *See*—
Umemura, Akihiro; Kunii, Hisayoshi; Shimizu, Michiyasu; and Sato, Yoshinari, 4,485,744, Cl. 108-51.100.
Kupsehus, Peter: *See*—
Hemmerich, Johann; Kupsehus, Peter; and Fraenkle, Helmut, 4,485,866, Cl. 165-90.000.
Kurauchi, Toshio; Takahashi, Hidero; Sato, Shigeyuki; Murase, Makoto; Takahara, Minoru; Ohi, Tamio; and Kamio, Takaki, to Kabushiki Kaisha Toyota Chuo Kenkyusho; Aisin Seiki Kabushiki Kaisha; and Aisin Kako Kabushiki Kaisha. Method for producing reinforced thermoplastic resin composition. 4,486,373, Cl. 264-142.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Tomita, Eihachiro; and Ota, Mitsuru, 4,486,810, Cl. 361-306.000.
Kureha Kogyo Kabushiki Kaisha: *See*—
Endo, Kaichi; Katahira, Yoshihiro; Hayashi, Eiichi; and Nakano, Satoshi, 4,486,100, Cl. 366-76.000.
Kurisu, Norio; Matsuda, Tsutomu; Shimada, Masaru; and Kubo, Keishi, to Ricoh Company, Ltd. Thermo-developable type diazo copying material with 2-naphthol coupler having long aliphatic chain amide substitution. 4,486,527, Cl. 430-158.000.
Kurita Machinery Manufacturing Company Limited: *See*—
Nakamura, Masayuki, 4,486,305, Cl. 210-227.000.
Kurple, Kenneth R.: *See*—
Kordomenos, Panagiotis I.; and Kurple, Kenneth R., 4,486,555, Cl. 523-400.000.
Kordomenos, Panagiotis I.; and Kurple, Kenneth R., 4,486,556, Cl. 523-400.000.
Kurtz, Stuart J.: *See*—
Lucchesi, Peter J.; Kurtz, Stuart J.; and Roberts, Ernest H., 4,486,377, Cl. 264-510.000.
Kussel, Willy: *See*—
Demircan, Bayramadi; and Kussel, Willy, 4,485,724, Cl. 91-29.000.
Kusuki, Yoshihiro: *See*—
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, 4,486,376, Cl. 264-342.00R.
Kusz, Maximillian, to Owens-Illinois, Inc. Child resistant package. 4,485,932, Cl. 215-222.000.

Kutz, Heinrich, to SMS Schloemann-Siemag Aktiengesellschaft. Apparatus for adjustably locking the movable counter gripping head of a sheet or section stretcher. 4,485,659, Cl. 72-302.000.

Kuusinen, Osmo; Rantanen, Mikko; Rintanen, Olavi; Pajunen, Reijo; Oittinen, Pekka; and Valtanen, Kalevi, to Finnish Chemicals Oy. Method of welding aluminum to titanium and a welded joint so produced. 4,486,647, Cl. 219-137.0WM.

Kuzyk, Roman: *See*—
Darnell, John W.; and Kuzyk, Roman, 4,486,389, Cl. 422-307.000.

Kyoto Ceramic Company Limited: *See*—
Baba, Yasushi; Tezuka, Hirofumi; and Kitagawa, Kohzo, 4,486,820, Cl. 362-183.000.

La Material Magnetique: *See*—
de Bennetot, Michel C., 4,486,638, Cl. 219-10.510.

La Plastiveneta S.p.A.: *See*—
Ziliotto, Alberto, 4,486,492, Cl. 428-252.000.

La Telephonie Industrielle et Commerciale Telic Alcatel: *See*—
Baltz, Rainier, 4,486,879, Cl. 370-62.000.

Lacefield, William B.; and Lindstrom, Terry D., to Eli Lilly and Company. 9-Carbamoylfluorene derivatives. 4,486,592, Cl. 546-17.000.

Lacour-Gayet, Philippe J., to Schlumberger Technology Corporation. Well logging: utilizing superposition of step-profile responses of logging tools to improve logs. 4,486,836, Cl. 364-422.000.

La Grouw, Johannes: *See*—
Van Loghem, Johannes J.; and La Grouw, Johannes, 4,485,538, Cl. 29-33.00K.

L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude: *See*—
Angelier, Nicole; and Colomb, Francois, 4,485,641, Cl. 62-514.00R.
Gauthier, Pierre, 4,486,210, Cl. 62-23.000.
Roullet, Alain, 4,485,854, Cl. 141-4.000.

Lalauze, Rene ; Pijolat, Christophe; and Couput, Jean-Paul, to Association pour la Recherche et la Developpement des Methodes et Processus Industriels (Armines). Method, sensor and device for detecting trace quantities of gases in a gaseous medium. 4,485,667, Cl. 73-23.000.

LaLonde, Paul D., to Donn Incorporated. Suspension ceiling grid with removable grid members. 4,485,605, Cl. 52-665.000.

La Mantia, Giuseppe: *See*—
Fabbri, Cesare; Bellitto, Gianfranco; La Mantia, Giuseppe; and Failla, Biagio, 4,486,209, Cl. 62-18.000.

Lambert, Nicole; Simon, Pierre; and Conti, Rene , to Centre de Recherches Metallurgiques-Centrum Voor Research In de Metallurgie; and Metallurgique & Miniere de Rodange-Athus, SA. Method of manufacturing rails. 4,486,243, Cl. 148-12.00R.

Lambowitz, Alan M., to St. Louis University. Filamentous fungi functional replicating extrachromosomal element. 4,486,533, Cl. 435-172.300.

Lamparsky, Dietmar; and Kaiser, Roman, to Givaudan Corporation. 2-Methyl-2-buten-1-yl tiglate as odorant or flavorant. 4,486,337, Cl. 252-522.00R.

Lancella, Attilio: *See*—
Ghigliotti, Giovanni; and Lancella, Attilio, 4,486,068, Cl. 339-252.00P.

Landi, Curtis L.; and Wilson, Susan L. Insole. 4,485,568, Cl. 36-44.000.

Landry, Kossuth J., Jr. Spreader bar for soil erosion prevention mats. 4,486,120, Cl. 405-17.000.

Landt, Harvey L., to Rockwell International Corporation. Pin diode switched impedance matching network having diode driver circuits transparent to RF potential. 4,486,722, Cl. 333-17.00M.

Lane, Wendell C., Jr., to Dana Corporation. Contact heater mounting assembly. 4,486,649, Cl. 219-536.000.

Langenau Manufacturing Company, The: *See*—
Strangward, William J., 4,486,040, Cl. 292-160.000.

Langer, Arthur W., Jr., to Exxon Research & Engineering Co. Preparation of linear olefin products. 4,486,615, Cl. 585-523.000.

Langer, Jochen: *See*—
Koch, Ulrich; Plotz, Peter; Konig, Dieter; Langer, Jochen; Switalski, Burkhardt; Schindler, H. Heinrich; and Wesselski, Willi, 4,486,123, Cl. 405-169.000.

Langlois, Michel: *See*—
Maumy, Michel; Capdevielle, Patrice J. G.; Dostert, Philippe L.; and Langlois, Michel, 4,486,349, Cl. 260-239.00A.

Langlois, Raymond: *See*—
Shankhla, Vikram S.; and Langlois, Raymond, 4,485,721, Cl. 89-15.000.

Lansbergen, Gabriel J. T.: *See*—
Schijf, Robert; Trommelen, August M.; and Lansbergen, Gabriel J. T., 4,486,457, Cl. 426-603.000.

Larkin, Bryan J., to Logan, Donald Andrew; Arthur Edward Pty. Ltd.; and Sunlea Developments Pty. Ltd. Play enclosure for children. 4,486,008, Cl. 256-26.000.

Laser Manufacturing Technologies, Inc.: *See*—
Ream, Stanley L., 4,486,886, Cl. 372-34.000.

Lasher, Dana A.; and Stelzenmuller, William K., to International Business Machines Corporation. Enhancement of video images by selective introduction of gray-scale pels. 4,486,785, Cl. 358-284.000.

Laska, Eugene M.: *See*—
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,486,436, Cl. 424-253.000.

Lass, Finn, to F. L. Smidth & Co. Vertical roller mill and method of use thereof. 4,485,974, Cl. 241-30.000.

Lauzon, Rodrigue V.: *See*—
Carriere, David B.; and Lauzon, Rodrigue V., 4,486,316, Cl. 252-8.50C.

Lawrence, Paul J.: *See*—
Baker, Josefina T.; Lawrence, Paul J.; and Townsley, Charles W., 4,486,536, Cl. 436-66.000.

Leach, John G., to General Electric Company. High voltage electric fuse. 4,486,734, Cl. 337-162.000.

Leahy, David J., to Dennison Manufacturing Company. Cover folders. 4,486,032, Cl. 281-46.000.

Leak Detective, Inc.: *See*—
Hudson, James H.; and Otto, Arthur W., deceased, 4,485,668, Cl. 73-40.50A.

Leake & Nelson Co., The: *See*—
Nelson, Terry L., 4,485,607, Cl. 52-741.000.

Leblanc, Jean: *See*—
Duplat, Gerard; and Leblanc, Jean, 4,486,154, Cl. 417-487.000.

Le Brasseur, Genevieve: *See*—
Machon, Jean-Pierre; Le Brasseur, Genevieve; Decroix, Jean-Claude; and Hert, Marius, 4,486,579, Cl. 526-65.000.

Leckrone, Michael E.; and Cutolo, Vincent T., Jr., to Cordis Corporation. Multi-mode microprocessor-based programmable cardiac pacer. 4,485,818, Cl. 128-419.0PG.

Lee, Hae-Chung. Device to make an object float through the utilization of magnets. 4,486,729, Cl. 335-306.000.

Leech, Edward J.; and Russo, Frank D., to Kollmorgen Technologies Corporation. High resolution screen printable resists. 4,486,466, Cl. 427-96.000.

Leewood, Alan R.: *See*—
Legg, Wesley E.; Ault, Russell L.; Mott, Richard A.; and Leewood, Alan R., 4,485,590, Cl. 49-501.000.

Le Floch, Gerard, to U.S. Philips Corporation. Digital FM demodulator using delay circuits. 4,486,716, Cl. 329-107.000.

Legg, Wesley E.; Ault, Russell L.; Mott, Richard A.; and Leewood, Alan R., to Owens-Corning Fiberglas Corporation. Door and frame molded of fibrous mineral material. 4,485,590, Cl. 49-501.000.

Le Goff, Pierre Y. J., to Centre National de la Recherche Scientifique-C.N.R.S. Method and device for storage in chemical form of mechanical or thermal energy and for recovery thereof in mechanical form. 4,485,629, Cl. 60-659.000.

Lehmann, Bernd: *See*—
Kleemann, Axel; Lehmann, Bernd; and Deller, Klaus, 4,486,600, Cl. 562-567.000.

Lehmann, Dieter: *See*—
Munzing, Rudolf; and Lehmann, Dieter, 4,485,593, Cl. 51-105.0SP.

Lehmann, J. C. L., to Binz GmbH U Co. Device for carrying disabled or sick persons. 4,485,504, Cl. 5-82.00R.

Lehr, James R.: *See*—
Hsieh, Shuang-shii; and Lehr, James R., 4,486,301, Cl. 209-167.000.

Leimer, Gerhard; and Gugel, Ernst, to Feldmuhle Aktiengesellschaft, ft 03. Polycrystalline shaped body of silicon carbide and method for its production. 4,486,543, Cl. 501-88.000.

Leinoff, David. Convertible clothing article. 4,485,493, Cl. 2-86.000.

Lekawa, Raymond E. Crown removal tool. 4,486,177, Cl. 433-161.000.

Le Martret, Odile: *See*—
Clemence, Francois; Le Martret, Odile; and Delevallee, Francoise, 4,486,438, Cl. 424-258.000.

Lenox Europa Maschinen GmbH: *See*—
Gorner, Bernd, 4,485,980, Cl. 242-56.00R.

Lenox, Ronald S.: *See*—
Hosfeld, Lewis K.; and Lenox, Ronald S., 4,486,523, Cl. 430-106.600.

Lenthe, Manfred; Allenbach, Udo; Buttner, Gerhard; and Christmann, Karl-Friedrich, to Bayer Aktiengesellschaft. Isolation of dihydroxybenzene-monoethers from reaction mixtures. 4,486,611, Cl. 568-653.000.

Lentz, William P.; Seward, Thomas P., III; and Shay, George C., to Corning Glass Works. Drawing laminated polarizing glasses. 4,486,213, Cl. 65-30.110.

Lenz, Helmut: *See*—
Albert, Winfried; and Lenz, Helmut, 4,486,534, Cl. 435-188.000.

Lenzmeier, Thomas E., to Container Corporation of America. Twin carton package with removable portions. 4,485,926, Cl. 206-602.000.

Leonard Automatics, Inc.: *See*—
Frushtick, Leonard, 4,485,572, Cl. 38-42.000.

Lepetit, Pierre: *See*—
Josso, Pierre; Lepetit, Pierre; Mazara, Pierre; and Massard, Marcel J., deceased, 4,486,233, Cl. 106-1.220.

Lepselter, Martin P.: *See*—
Koeneke, Conrad J.; Lepselter, Martin P.; and Lynch, William T., 4,485,550, Cl. 29-571.000.

Les Cables De Lyon: *See*—
Morisot, Bernard; and Taton, Michel, 4,486,621, Cl. 174-50.000.

Lesher, George Y.; and Dickinson, William B., to Sterling Drug Inc. Cardiotonic use of 4,5-dihydro-6-(4-pyridinyl)-3(2H)-pyridazinones. 4,486,431, Cl. 424-250.000.

L'Etat Francais, represente par le Ministre des P.T.T. (Centre National d'Etudes des Telecommunications): *See*—
Marti, Bernard, 4,486,779, Cl. 358-147.000.

Leung, Ka-Ngo; and Ehlers, Kenneth W., to United States of America, Energy. Negative ion source. 4,486,665, Cl. 250-427.000.

Lever Brothers Company: *See*—
Schijf, Robert; Trommelen, August M.; and Lansbergen, Gabriel J. T., 4,486,457, Cl. 426-603.000.

Levinson, Frank H., to AT&T Bell Laboratories. Optical coupling device. 4,486,071, Cl. 350-96.180.

Lewin, Gerhard; and Nir, Dan, to Nerken Research Corp.; and Technion Research & Development Foundation, Ltd. Method of depositing

a carbon film on a substrate and products obtained thereby. 4,486,286, Cl. 204-192.00C.
Lewis, Marcus E. Cigarette lighter securing accessory. 4,486,169, Cl. 431-253.000.
Li, Hsueh M.: *See*—
Chung, James Y. J.; Jones, Jesse D.; and Li, Hsueh M., 4,486,561, Cl. 524-107.000.
Liautaud, James P.; Stultz, Peter F.; and Maloney, David L., to Liautaud, James P. Belt holder for portable radio apparatus. 4,485,946, Cl. 224-242.000.
Lidwell, Michael O.: *See*—
Neil, Iain A.; Lidwell, Michael O.; and McCreath, William, 4,486,069, Cl. 350-1.200.
Lile, Tim W.: *See*—
Feliss, Norbert A.; and Lile, Tim W., 4,486,798, Cl. 360-103.000.
Lillis, Lorraine: *See*—
Weinstein, Morris; and Lillis, Lorraine, 4,486,195, Cl. 8-137.000.
Lilly Industries Limited: *See*—
Chakrabarti, Jiban K.; and Hotten, Terrence M., 4,486,591, Cl. 544-371.000.
Lin, Chiu-Hong, to Upjohn Company, The. 2-,3-, or 4-Pyridinylmethylamino arylic acids as thromboxane A_2 synthetase and 5-lipoxygenase inhibitors. 4,486,593, Cl. 546-335.000.
Lindenmann, Alois: *See*—
Wallner, Peter; and Lindenmann, Alois, 4,486,067, Cl. 339-218.00R.
Linder, Bjorn H. Oxide anode for use in impressed current cathodic corrosion protection. 4,486,288, Cl. 204-196.000.
Lindgren, Mats E. G., to AB Kompositprodukter S.K.F.M. Rotatable flyer. 4,485,614, Cl. 57-58.520.
Lindstrom, Terry D.: *See*—
Lacefield, William B.; and Lindstrom, Terry D., 4,486,592, Cl. 546-17.000.
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Sloan, Frederick R. W., 4,486,197, Cl. 8-493.000.
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Lipkes, Zeev, to Burroughs Corporation. Tool for removing soldered IC packages. 4,485,958, Cl. 228-19.000.
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Hulland, Burton L.; and Litchford, George B., 4,486,755, Cl. 343-6.5LC.
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Gallagher, John B., 4,485,632, Cl. 62-179.000.
Logan, Donald Andrew: *See*—
Larkin, Bryan J., 4,486,008, Cl. 256-26.000.
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Romer, Bendt W.; and Lorentzen, Jens O., 4,486,153, Cl. 417-313.000.
Lorenz, Kurt, to Carl Still GmbH & Co. KG, Firma. Coke oven door having a laminated sealing strip. 4,486,271, Cl. 202-248.000.
Lorenzini, Robert A. Mouthpiece facing gauge. 4,485,559, Cl. 33-174.00R.
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Heyer, Raymond F.; and Lovness, William R., 4,486,200, Cl. 51-295.000.
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Crittenden, Mark D.; Lowe, Graeme J.; and McLaren, Neil S., 4,485,729, Cl. 98-1.500.
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Hayashi, Katsumi, 4,486,573, Cl. 525-285.000.
Lucas Industries: *See*—
Hill, William F., 4,485,785, Cl. 123-418.000.
Lucchesi, Peter J.; Kurtz, Stuart J.; and Roberts, Ernest H., to Union Carbide Corporation. Process for reducing draw resonance in polymeric film. 4,486,377, Cl. 264-510.000.
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Nakazawa, Mitsuo; Ballato, Arthur; and Lukaszek, Theodore J., 4,486,682, Cl. 310-361.000.
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Krywiczanin, Wladyslaw H.; and Lumsden, William, 4,485,981, Cl. 242-57.000.
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Orlando, Daniel; Lund, David L.; and Waber, Glenn R., 4,485,959, Cl. 228-102.000.
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Cornelius, Rajendra S.; Lunk, Hans E.; Martin, Albert R.; and Mendenhall, Mark D., 4,486,721, Cl. 333-1.000.
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Lutz, Dieter; and Thieler, Wolfgang, to Sachs-Systemtechnik GmbH. Torsional vibration damper, particularly for the clutch disk of a motor vehicle friction disk clutch. 4,485,906, Cl. 192-106.100.
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Lysenko, Zenon; and Pews, Richard G., to Dow Chemical Company, The. Preparation of mono- and dibromo- or chloroaldehydes. 4,486,608, Cl. 568-466.000.
Lysobey, Morris, to RCA Corporation. Diode switching system for a selectable impedance matching network. 4,486,723, Cl. 333-17.00M.
Maag Gear-Wheel & Machine Company Limited: *See*—
Blanc, Guy-Francois; and Spaeth, Hans, 4,486,695, Cl. 318-663.000.
Maas, Michael F.; and Hendrickson, Max S., to Honeywell Inc. Frequency shift key demodulator. 4,486,715, Cl. 329-50.000.
Mac Valves, Inc.: *See*—
Neff, James A., 4,485,846, Cl. 137-625.640.
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Macha, Emil S.: *See*—
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Barrett, Richard L., 4,486,895, Cl. 378-98.000.

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Kobayashi, Yoshiki; Maejima, Hideo; Bandoh, Tadaaki; and Nakanishi, Hiroaki, 4,486,834, Cl. 364-200.000.

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Magdo, Ingrid E.; and Rupprecht, Hans S., to International Business Machines Corporation. Complementary transistor structure and method for manufacture. 4,485,552, Cl. 29-577.00C.

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Swan, William C.; and Kastan, Howard, 4,485,702, Cl. 81-98.000.

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Deyoung, David M., 4,486,059, Cl. 339-14.00R.

Maguire, Daniel J. Tamperproof closure. 4,485,934, Cl. 215-252.000.

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Baksa, Gyorgy; Boros, Jozsef; Horvath, Gyula; Ihasz, Balazs; Pais, Zoltan; Rainis, Matyas; Sitkei, Ferenc; Solymar, Karoly; Toth, Bela; Vallo, Ferenc; Voro a, Istvan; Orban nee Kelemen, Maria; and Zoldi, Jozsef, 4,486,393, Cl. 423-121.000.

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Fournier, Yves; Rigoulot, Claude; and Mainy, Pierre, 4,485,560, Cl. 33-178.00F.

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Hawker, Michael J.; and Mair, Joseph, 4,486,053, Cl. 303-119.000.

Majewicz, Thomas G., to Hercules Incorporated. Carboxymethyl hydroxyethyl cellulose composition. 4,486,335, Cl. 252-315.300.

Majkrzak, Charles P., to International Telephone and Telegraph Corporation. Protective sheath for a waveguide suspended above ground. 4,486,725, Cl. 333-248.000.

Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kume, Toshiaki; and Kakimura, Toshihide, to Janome Sewing Machine Co., Ltd. Electronic sewing machine. 4,485,750, Cl. 112-158.00E.

Maki, Hiroshi: *See*—
Harada, Haruhisa; and Maki, Hiroshi, 4,486,605, Cl. 568-311.000.

Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, to Ube Industries, Ltd. Process for modifying porous polymeric membrane. 4,486,376, Cl. 264-342.00R.

Makohl, Friedheim, to Norton Christensen, Inc. Direct drive for deep-well drilling. 4,485,880, Cl. 175-107.000.

Malon, Raymond F.; and Zampini, Anthony, to Monsanto Company. Asymmetric gas separation membranes. 4,486,202, Cl. 55-158.000.

Maloney, David L.: *See*—
Lisutaud, James P.; Stultz, Peter F.; and Maloney, David L., 4,485,946, Cl. 224-242.000.

Maloney, Kevin; and Schroer, Charles E., to Cosco, Inc. Platform stool. 4,485,892, Cl. 182-161.000.

Maloomian, Laurence G. System and method for composite display. 4,486,774, Cl. 358-93.000.

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Chernousov, Alexandr F.; Domrachev, Sergei A.; Ivanov, Alexei I.; Malyshev, Boris N.; Saljuk, Viktor A.; Skobelkin, Oleg K.; and Brekhov, Evgeny I., 4,485,811, Cl. 128-303.100.

Mamo, Anthony C. Firearm bullet. 4,485,742, Cl. 102-430.000.

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Turunen, Olli; Mandell, Leo; Eklund, Vidar; Ekman, Kurt; and Huttunen, Jouko, 4,486,585, Cl. 536-30.000.

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Peregrim, Theodore J.; Kanter, Irving; and Mangiapane, Rosario, 4,486,756, Cl. 343-16.00M.

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Rausch, Georg, 4,485,842, Cl. 137-489.000.

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Bracker, Gerd-Peter; and Riemann, Hanns-Helmut, 4,485,745, Cl. 110-229.000.

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Falk, David O., 4,485,875, Cl. 166-295.000.

Marcanio, Louis. Portable bathing tub for invalids. 4,485,502, Cl. 4-585.000.

Marcus, Konrad H.; Flowerday, Carl W.; and Fleming, Dennis J., to Prince Corporation. Vehicle visor lighting apparatus. 4,486,819, Cl. 362-142.000.

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Marini, Jean: *See*—
Graveille, Alain; Marini, Jean; and Romy, Dominique, 4,486,382, Cl. 376-216.000.

Marinus, Antonius, to U.S. Philips Corporation. Switched-mode self oscillating supply voltage circuit. 4,486,822, Cl. 363-19.000.

Marker-Patentverwertungsgesellschaft mbH: *See*—
Klubitschko, Gerd, 4,485,536, Cl. 280-605.000.

Marmarosi nee Kellner, Katalin: *See*—
Schwartz, Jozsef; Hornyak nee Hamori, Marya; Sagi, Janos; Marmarosi nee Kellner, Katalin; Radvanyi nee Hegedus, Erzsebet; Szigeti, Zoltan; Cseh, Edit; and Bujtas nee Tolgyes, Klara, 4,486,222, Cl. 71-100.000.

Marnet, Chrysanth; and Kassebohm, Borchert, to Stadtwerke Duesseldorf AG. Apparatus for neutralizing acidic or acid-containing pollutants in furnace flue gases. 4,486,388, Cl. 422-178.000.

Marpac Industries, Inc.: *See*—
Sykes, Donald J., 4,485,933, Cl. 215-250.000.

Marquette Tool and Die Company: *See*—
Freber, Elmer C., 4,485,972, Cl. 239-553.300.

Marsh, Walter H. W.; and Adams, Kenneth D., to Singer Company, The. Thread cutter in sewing machine face plate. 4,485,755, Cl. 112-292.000.

Marshall, Jay K.: *See*—
Randall, Bruce E.; and Marshall, Jay K., 4,486,707, Cl. 324-142.000.

Marshall, Winston S.; Fleisch, Jerome H.; and Cullinan, George J., to Eli Lilly and Company. Quinoxalinedione leukotriene release inhibitors. 4,486,432, Cl. 424-250.000.

Martel, Thomas J.: *See*—
Bowen, Robert F.; and Martel, Thomas J., 4,486,640, Cl. 219-10.55E.

Marti, Bernard, to L'Etat Francais, represente par le Ministre des P.T.T. (Centre National d'Etudes des Telecommunications); and Etablissement Public de Diffusion dit "Telediffusion de France". Apparatus to display graphic messages transmitted by videotext systems. 4,486,779, Cl. 358-147.000.

Martin, Albert R.: *See*—
Cornelius, Rajendra S.; Lunk, Hans E.; Martin, Albert R.; and Mendenhall, Mark D., 4,486,721, Cl. 333-1.000.

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Pershing, David W.; Martin, George B.; and Munro, James M., 4,485,747, Cl. 110-347.000.

Martin, Henry: *See*—
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,486,224, Cl. 71-105.000.

Martin, Stephen; and Clegg, Roy, to Davy McKee (Sheffield) Limited. Rolling mill control system. 4,485,649, Cl. 72-10.000.

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Hieber, Ernst; Kaden, Hans-Dieter; Martini, Helmut; and Ziegler, Gerhard, 4,486,173, Cl. 432-205.000.

Maruhashi, Yoshitsugu: *See*—
Hirata, Sadao; Tanikawa, Isao; and Maruhashi, Yoshitsugu, 4,486,378, Cl. 264-512.000.

Marukokeihouki Co. Ltd.: *See*—
Kudo, Michio; Fukami, Tatsuo; and Hayashibe, Rinpei, 4,486,742, Cl. 340-384.00E.

Maruyama, Teruo; Yamauchi, Shinya; and Kagoroku, Nobuo, to Matsushita Electric Industrial Co., Ltd. Rotary vane compressor with suction port adjustment. 4,486,158, Cl. 418-39.000.

Maschinenfabrik Carl Zangs Aktiengesellschaft: *See*—
Slomma, Heinz-Georg; and Ripkens, Hans-Gerd, 4,485,752, Cl. 112-221.000.

Maschinenfabrik Walter Scheele GmbH & Co. KG: *See*—
Feger, Herbert; Griesbach, Rolf; and Geue, Franz-Hubert, 4,486,156, Cl. 417-517.000.

Maschinenfabrik WIFAG: *See*—
Gertsch, Peter; Imhof, Robert; and Zahnd, Andreas, 4,485,738, Cl. 101-365.000.

Mascioli, Rocco L.: *See*—
Bechara, Ibrahim S.; and Mascioli, Rocco L., 4,486,370, Cl. 264-53.000.

Mashiko, Masayoshi; and Suzuki, Keijiro, to Nippon Mining Co., Ltd.; and Nippon Metal Plating Co., Ltd. Process for producing rhodium-plated article with black color and wear resistance. 4,486,513, Cl. 428-670.000.

Massard, Marcel J., deceased: *See*—
Josso, Pierre; Lepetit, Pierre; Mazars, Pierre; and Massard, Marcel J., deceased, 4,486,233, Cl. 106-1.220.

Massard, Yvette L., heiress: *See*—
Josso, Pierre; Lepetit, Pierre; Mazars, Pierre; and Massard, Marcel J., deceased, 4,486,233, Cl. 106-1.220.

Masui, Mikio: *See*—
Enoguchi, Yuji; and Masui, Mikio, 4,486,014, Cl. 271-200.000.

Matsubara, Akitoshi: *See*—
Murata, Hideki; Terada, Sadatugu; Tamaki, Kiyoshi; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, 4,486,559, Cl. 523-468.000.

Matsuda, Teruo: *See*—
Kawaguchi, Kizo; and Matsuda, Teruo, 4,485,592, Cl. 51-58.000.

Matsuda, Tsutomu: *See*—
Kurisu, Norio; Matsuda, Tsutomu; Shimada, Masaru; and Kubo, Keishi, 4,486,527, Cl. 430-158.000.

Matsuda, Yoshio: *See*—
Yoshida, Hiroshi; Akashi, Shunji; and Matsuda, Yoshio, 4,485,532, Cl. 24-381.000.

Matsui, Toshihiko: *See*—
Kamide, Kenji; Okajima, Kunihiko; and Matsui, Toshihiko, 4,486,119, Cl. 106-177.000.

Matsumae, Hiroshi; Myojin, Hisayoshi; and Morishita, Sumitada, to Mitsubishi Jukogyo Kabushiki Kaisha. Spud arrangement for a dredge. 4,485,569, Cl. 37-73.000.

Matsumoto, Hideyuki; and Bando, Shiyouichi, to JGC Corporation. Process for desulfurizing and refining hydrocarbon fractios containing large quantities of aromatic components. 4,486,297, Cl. 208-211.000.

Matsumoto, Hiroshi: *See*—
Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, 4,486,223, Cl. 71-103.000.
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Matsumoto, Kunio; Izumi, Rokuro; Seijo, Hideji; and Mizuguchi, Hiroyuki, to Toyo Jozo Company, Ltd. Process for preparing an amino group-containing polyacrylonitrile polymer. 4,486,549, Cl. 521-53.000.

Matsumura, Kazuaki; and Nakanishi, Seiki, to NEC Kansai, Ltd. Method of manufacturing an electrical circuit wiring arrangement. 4,486,817, Cl. 361-424.000.

Matsumura, Tadanobu: *See*—
Takagi, Yasumasa; Sasaki, Tomohico; Matsumura, Tadanobu; and Gobuichi, Tadashi, 4,486,058, Cl. 339-14.00R.

Matsushima, Takeo: *See*—
Kojima, Yasuhumi; Yoshimi, Akiro; Kamiya, Michihiko; Ootsuka, Fumio; and Matsushima, Takeo, 4,486,837, Cl. 364-424.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Kikuya, Satoshi; Sumisha, Hidemichi; and Minamide, Seiko, 4,485,988, Cl. 242-198.000.
Maruyama, Teruo; Yamauchi, Shinya; and Kagoroku, Nobuo, 4,486,158, Cl. 418-39.000.

Matsushita, Takao; and Shimizu, Koji, to Toray Silicone Co., Ltd. Method for manufacturing a rubber sheet which is electrically insulating and thermally radiating and rubber sheets made therefrom. 4,486,495, Cl. 428-266.000.

Matsushita, Toshihiko; Morishita, Sadao; and Hiraishi, Shigetoshi, to Mitsubishi Paper Mills, Ltd. Plain paper transfer type pressure-sensitive copying paper. 4,486,764, Cl. 346-209.000.

Matsushita, Tsuyoshi; Takahashi, Makoto; and Takaishi, Kazuaki, to Tokyo Electric Co. Stepping motor driving circuit. 4,486,696, Cl. 318-696.000.

Matsuura, Masataka: *See*—
Funada, Fumiaki; Matsuura, Masataka; and Wada, Tomio, 4,486,760, Cl. 346-107.00R.
Nonomura, Keisaku; Matsuura, Masataka; Uede, Hisashi; Kishi, Kohhei; and Kato, Hiroaki, 4,486,748, Cl. 340-756.000.

Matsuyama, Haruhiko: *See*—
Nakatani, Mitsuo; Matsuyama, Haruhiko; Okunaka, Masaaki; Yokono, Hitoshi; Isogai, Tokio; Saitoh, Tadashi; and Midorikawa, Sumiyuki, 4,486,232, Cl. 75-252.000.

Matsuzaki, Narihide; Oshima, Tasuke; and Nishioka, Akira, to Ajinomoto Company Incorporated. Process of extracting vegetable oil and fat. 4,486,353, Cl. 260-412.400.

Mattel, Inc.: *See*—
Halford, Wayne R.; and Kelley, William J., 4,485,586, Cl. 446-448.000.

Mattheis, Harley H.; and Khan, Agha M. A., to Risdon Corporation. Pencil sharpener. 4,485,862, Cl. 145-3.100.

Matthews, Peter P.: *See*—
Guertin, Raymond J.; Kang, Chuhong; and Matthews, Peter P., 4,485,594, Cl. 51-165.710.

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Matts, Sigvard: *See*—
Gustafsson, Alf G.; and Matts, Sigvard, 4,486,704, Cl. 323-246.000.

Maumy, Michel; Capdevielle, Patrice J. G.; Dostert, Philippe L.; and Langlois, Michel, to Delalande, S.A. Process for preparing para-quinone or ortho-quinone derivatives, possibly alkoxylated or aryloxylated, respectively from the corresonding hydroquinone or pyrocatechic derivatives. 4,486,349, Cl. 260-239.00A.

May, Richard L.; and Curren, Kenneth J., to Androbot Singapore Pte. Ltd. Drafting device for use with computers. 4,485,555, Cl. 33-18.00R.

Mayer, Theodore. Needle disposal apparatus. 4,485,918, Cl. 206-366.000.

Mazars, Pierre: *See*—
Josso, Pierre; Lepetit, Pierre; Mazars, Pierre; and Massard, Marcel J., deceased, 4,486,233, Cl. 106-1.220.

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Takata, Naoto; and Kanai, Seita, 4,486,030, Cl. 280-689.000.

Mazur, Richard J.; and Wood, James A., to American Standard Inc. Synchronous wheel-slip protection system. 4,486,839, Cl. 364-426.000.

McCallister, Ronald D.; and Shearer, Daniel, III, to Motorola, Inc. Numerically controlled oscillator using quadrant replication and function decomposition. 4,486,846, Cl. 364-607.000.

McClure, David E.: *See*—
Baldwin, John J.; and McClure, David E., 4,486,446, Cl. 424-283.000.

McCreath, William: *See*—
Neil, Iain A.; Lidwell, Michael O.; and McCreath, William, 4,486,069, Cl. 350-1.200.

McCurley, Jack, to Q-dot Corporation. Waste heat recovery system having thermal sleeve support for heat pipe. 4,485,865, Cl. 165-76.000.

McGinnis, George P. Dual-rate fuel flow control system for space heater. 4,485,965, Cl. 236-11.000.

McGraw-Edison Company: *See*—
Yain'il, Charles, 4,486,005, Cl. 254-29.00A.

McKernan, Gary M. Door frame assembly machine. 4,486,264, Cl. 156-538.000.

McLaren, Neil S.: *See*—
Crittenden, Mark D.; Lowe, Graeme J.; and McLaren, Neil S., 4,485,729, Cl. 98-1.500.

McLean, Bernard D.: *See*—
Welsch, John H.; and McLean, Bernard D., 4,485,521, Cl. 16-44.000.

McMahon, Richard: *See*—
Parsons, Robert R.; McMahon, Richard; and Thewalt, Michael L., 4,486,289, Cl. 204-298.000.

McMillan, Clyde H.: *See*—
McMillan, Stewart G.; Steingass, Robert W.; and McMillan, Clyde H., 4,485,877, Cl. 169-48.000.

McMillan, Stewart G.; Steingass, Robert W.; and McMillan, Clyde H., to Fire Task Force Innovations, Inc. Wall penetrating fire extinguishing device. 4,485,877, Cl. 169-48.000.

McMurray, Robert; and Pratley, Gerald, to British Petroleum Company Limited, The. Flare having noise attenuation. 4,486,167, Cl. 431-114.000.

McNew, Thomas A. System for passing elongated paper through a reproducing apparatus. 4,486,093, Cl. 355-29.000.

McVey, Paul W. Turbine-type wind machine. 4,486,143, Cl. 415-2.00R.

Mead Corporation: *See*—
Prusas, Zenon C., 4,486,267, Cl. 162-25.000.

Mecanique Generale J. Deville & Cie Societe Anonyme: *See*—
Goudard, Yves, 4,485,732, Cl. 99-549.000.

Mechanic, Gerald; and Binderman, Itzhak. Composition for and treatment of teeth. 4,486,403, Cl. 424-54.000.

Mechanical Technology Incorporated: *See*—
Fanuele, Frank, 4,485,678, Cl. 73-660.000.

Medicor Muvek: *See*—
Domjan, Laszlo; Balint, Geza; and Bozsoky, Sandor, 4,485,825, Cl. 128-774.000.

Medtronic, Inc.: *See*—
Anderson, Kenneth M.; and Brumwell, Dennis A., 4,485,813, Cl. 128-675.000.
Cahalan, Patrick T.; and Schwinghammer, Michelle A., 4,486,290, Cl. 204-414.000.

Meitzner, Erich F.; and Oline, James A., to Rohm and Haas Company. Polymerication processes and products therefrom. 4,486,313, Cl. 210-681.000.

Melchior, Jean F. Supercharged internal combustion engine equipped with an air intercooling system. 4,485,624, Cl. 60-599.000.

Melnyk, William; and Fries, Robert P., to Ex-Cell-O Corporation. Heat exchanger. 4,485,867, Cl. 165-173.000.

Melville, Douglas F., Jr., to Knomark, Inc. Gas binding resistant chemical dispenser. 4,485,500, Cl. 4-228.000.

Melvin, Lawrence S., Jr.: *See*—
Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,486,428, Cl. 424-248.400.
Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,486,609, Cl. 568-734.000.

Mendelsohn, Morris A.; Navish, Francis W., Jr.; and Rudd, George E., to Westinghouse Electric Corp. Resilient high modulus polyurethane elastomer. 4,485,719, Cl. 89-1.816.

Mendenhall, Mark D.: *See*—
Cornelius, Rajendra S.; Lunk, Hans E.; Martin, Albert R.; and Mendenhall, Mark D., 4,486,721, Cl. 333-1.000.

Meneghin, Mariano; Piccinelli, Piero; and Giordano, Claudio, to Zambon S.p.A. Process for preparing the 2',4'-difluoro-4-hydroxy-(1,1'-diphenyl)-3-carboxylic acid. 4,486,599, Cl. 562-469.000.

Meneghin, Mariano: *See*—
Giordano, Claudio; Minisci, Francesco; Meneghin, Mariano; and Perdoncin, Giulio, 4,486,352, Cl. 260-397.100.

Merck & Co., Inc.: *See*—
Baldwin, John J.; and McClure, David E., 4,486,446, Cl. 424-283.000.
Freidinger, Roger, 4,486,415, Cl. 424-177.000.
Shepard, Kenneth L., 4,486,444, Cl. 424-275.000.

Merkel, Stephen L., to Nordson Corporation. Heated liquid system interlock. 4,486,149, Cl. 417-32.000.

Merrell Toraude Et Compagnie: *See*—
Fozard, John R.; and Gittos, Maurice W., 4,486,441, Cl. 424-265.000.

Merriam, Charles N.: *See*—
Colon, Ismael; and Merriam, Charles N., 4,486,576, Cl. 525-471.000.

Mertin, Dietrich: *See*—
Derner, Paul; and Mertin, Dietrich, 4,485,603, Cl. 52-398.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Mueller, Guenther, 4,485,993, Cl. 244-135.00B.

Messerschmitt-Bolkow-Blohm GmbH: *See*—
Hemmerich, Johann; Kupschus, Peter; and Fraenkle, Helmut, 4,485,866, Cl. 165-90.000.

Messner, Caspar O. H.: *See*—
Ebner, Walter, 4,485,757, Cl. 118-44.000.

Metallurgique & Miniere de Rodange-Athus, SA.: *See*—
Lambert, Nicole; Simon, Pierre; and Conti, Rene , 4,486,243, Cl. 148-12.00R.
Metalworking Lasers International Ltd.: *See*—
Hoag, Ethan D.; and Zieders, Glenn W., 4,486,887, Cl. 372-58.000.
Metropolitan Wire Corporation: *See*—
Welsch, John H.; and McLean, Bernard D., 4,485,521, Cl. 16-44.000.
Metz, Josef; and Winkler, Gert, to Rheinmetall GmbH. Recoil brake with hydropneumatic recuperator and forward movement damping. 4,485,722, Cl. 89-43.00R.
Metzeler Kautschuk GmbH: *See*—
Krasz, Jurgen, 4,486,256, Cl. 156-257.000.
Meyer, Danny S.; and Moran, George A., to Joy Manufacturing Company. Gate valve structure. 4,486,003, Cl. 251-328.000.
Meyer, Larry A.: *See*—
Champlin, Keith S.; Preimesberger, Ernest C.; Meyer, Larry A.; and Miller, George W., 4,486,852, Cl. 364-900.000.
Meyer, Wilhelm, to Meyra Krankenfahrzeug-fabrik Wilhelm Meyer GmbH & Co. KG. Leg support for a wheelchair. 4,486,048, Cl. 297-433.000.
Meyer, Wilhelm: *See*—
Brandenstein, Manfred; and Meyer, Wilhelm, 4,486,056, Cl. 384-477.000.
Meyers, Kevin O., to Atlantic Richfield Company. Method for scale removal and scale inhibition in a well penetrating a subterranean formation. 4,485,874, Cl. 166-279.000.
Meyra Krankenfahrzeug-fabrik Wilhelm Meyer GmbH & Co. KG: *See*—
Meyer, Wilhelm, 4,486,048, Cl. 297-433.000.
Michaels of Oregon Co.: *See*—
Cook, Clifton L., 4,485,947, Cl. 224-243.000.
Cook, Clifton L., 4,485,948, Cl. 224-243.000.
Michaelson, Robert C.; Austin, Richard G.; and White, Donald A., to Exxon Research & Engineering Co. Process for hydroxylating olefins using an osmium carbonyl catalyst. 4,486,613, Cl. 568-860.000.
Michigan Consolidated Gas Company: *See*—
Battah, Husam, 4,486,148, Cl. 417-2.000.
Micro Consultants Limited: *See*—
Catlow, George W., 4,486,775, Cl. 358-106.000.
Micropore International Limited: *See*—
Grasso, Alfie L., 4,486,648, Cl. 219-501.000.
Middleton, David L., to Kimberly-Clark Corporation. Melt-blowing die tip with integral tie bars. 4,486,161, Cl. 425-7.000.
Midland-Ross Corporation: *See*—
Pletcher, Donald L., 4,486,133, Cl. 411-84.000.
Midorikawa, Sumiyuki: *See*—
Nakatani, Mitsuo; Matsuyama, Haruhiko; Okunaka, Masaaki; Yokono, Hitoshi; Isogai, Tokio; Saitoh, Tadashi; and Midorikawa, Sumiyuki, 4,486,232, Cl. 75-252.000.
Miles Laboratories, Inc.: *See*—
Buckler, Robert T., 4,486,344, Cl. 260-121.000.
Millard, Ernest C.; and Brown, William D., to Rohr Industries, Inc. Method for fabricating contoured perforated composite laminate structure. 4,486,372, Cl. 264-137.000.
Miller, Alistair A.: *See*—
Baxter, Martin G.; Elphick, Albert R.; Miller, Alistair A.; and Sawyer, David A., 4,486,354, Cl. 260-465.00E.
Miller, Frank J., Jr.: *See*—
Seifert, Raymond C.; and Miller, Frank J., Jr., 4,486,063, Cl. 339-97.00C.
Miller, George W.: *See*—
Champlin, Keith S.; Preimesberger, Ernest C.; Meyer, Larry A.; and Miller, George W., 4,486,852, Cl. 364-900.000.
Miller, Jan D.; and Misra, Manoranjan, to University of Utah. Process for separating high viscosity bitumen from tar sands. 4,486,294, Cl. 208-11.0LE.
Miller, Walter E.: *See*—
Tramposch, Herbert; Randmer, Glen J.; and Miller, Walter E., 4,485,881, Cl. 177-211.000.
Millet, Catherine: *See*—
Ser, Jean-Claude; N'Guyen, Quang L.; Millet, Catherine; and Szarazi, Bela, 4,486,448, Cl. 424-294.000.
Millmaster Onyx Group Inc.: *See*—
Weinstein, Morris; and Lillis, Lorraine, 4,486,195, Cl. 8-137.000.
Minamide, Seiko: *See*—
Kikuya, Satoshi; Sumisha, Hidemichi; and Minamide, Seiko, 4,485,988, Cl. 242-198.000.
Minamiyama, Toshimasa; and Arahori, Haruo, to Fuji Kuuki Kabushiki Kaisha. Grinding and polishing apparatus. 4,485,595, Cl. 51-165.920.
Minisci, Francesco: *See*—
Giordano, Claudio; Minisci, Francesco; Meneghin, Mariano; and Perdoncin, Giulio, 4,486,352, Cl. 260-397.100.
Minister of National Defence of her Majesty's Canadian Government: *See*—
Norman, J. James, 4,485,665, Cl. 73-19.000.
Ministry of International Trade & Industry: *See*—
Ebata, Yoshihiro; Kose, Saburo; Kinoshita, Makoto; and Ueno, Tsutomu, 4,486,257, Cl. 156-325.000.
Minnesota Mining and Manufacturing Company: *See*—
Ball, James H.; Houts, Ronald C.; and Schaetzel, Phillip R., 4,486,620, Cl. 174-41.000.
Guilbert, Curtis R., 4,486,558, Cl. 523-466.000.
Heyer, Raymond F.; and Lovness, William R., 4,486,200, Cl. 51-295.000.
Trine, Richard D.; and Vasilakes, Lloyd S., 4,486,619, Cl. 174-34.000.
Warhol, Nicholas, 4,486,090, Cl. 355-3.00R.
Minolta Camera Kabushiki Kaisha: *See*—
Enoguchi, Yuji; and Masui, Mikio, 4,486,014, Cl. 271-200.000.
Tanaka, Susumu; and Oka, Tateki, 4,485,760, Cl. 118-657.000.
Minter, Jerry B. Connector and clip therefor. 4,486,066, Cl. 339-176.0MP.
Mirza, Jean, to Bayer Aktiengesellschaft. Process for the production of rubber articles reinforced with steel cords. 4,486,477, Cl. 427-388.100.
Misra, Manoranjan: *See*—
Miller, Jan D.; and Misra, Manoranjan, 4,486,294, Cl. 208-11.0LE.
Misumi, Teruo; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Shirai, Shigeru, to Canon Kabushiki Kaisha. Photoconductive member with doped and oxygen containing amorphous silicon layers. 4,486,521, Cl. 430-65.000.
Mitchelson, David L., to Movement Techniques Limited. Movement measuring apparatus and landmarks for use therewith. 4,486,095, Cl. 356-152.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Ishikawa, Takayoshi; Genba, Yasuhi; Tamaru, Shigemi; and Eguchi, Kiyoshi, 4,486,814, Cl. 361-339.000.
Miura, Keiichi, 4,485,497, Cl. 364-469.000.
Murakami, Tadaki; Ikeda, Yasuhiko; and Ishii, Isao, 4,486,546, Cl. 501-153.000.
Nakajima, Takashi, 4,486,250, Cl. 148-433.000.
Naya, Eizo; Horiuchi, Toshiaki; Takeya, Yasushi; Inagaki, Kouichi; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,486,631, Cl. 200-144.00B.
Shoji, Morio; and Yamamoto, Akiyoshi, 4,485,652, Cl. 72-19.000.
Tachino, Kanzo; and Kajiyama, Ryuichi, 4,485,895, Cl. 187-29.00R.
Takahashi, Masaru, 4,486,815, Cl. 361-345.000.
Wada, Shunichi, 4,485,680, Cl. 73-861.220.
Yamamoto, Sakuei; Inao, Hiroshi; Tokumitsu, Kiyosori; Nishida, Mitsuhiro; Ishikawa, Takatoshi; and Sakabe, Shigekazu, 4,486,677, Cl. 310-64.000.
Yasuda, Mitsuo; Nishizawa, Toshizo; Yuchi, Kazuhide; Kawahira, Hiroto; and Nagatomo, Hideaki, 4,485,634, Cl. 62-196.200.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Nakagami, Tatsuro; and Danno, Yoshiaki, 4,485,777, Cl. 123-198.00F.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Hasegawa, Akira; and Sakaguchi, Katsuyoshi, 4,486,162, Cl. 425-48.000.
Irie, Nobuhiko, 4,486,259, Cl. 156-398.000.
Matsumae, Hiroshi; Myojin, Hisayoshi; and Morishita, Sumitada, 4,485,569, Cl. 37-73.000.
Yoshida, Yukio; Tanaka, Akira; Fukumoto, Ryutaro; Akimoto, Ryosaku; Tanaka, Shigetoshi; and Ito, Nobuaki, 4,485,863, Cl. 165-42.000.
Mitsubishi Paper Mills, Ltd.: *See*—
Matsushita, Toshihiko; Morishita, Sadao; and Hiraishi, Shigetoshi, 4,486,764, Cl. 346-209.000.
Mitsuboshi Belting Ltd.: *See*—
Hirai, Hideo, 4,486,375, Cl. 264-254.000.
Mitsui Mining & Smelting Co., Ltd.: *See*—
Tozawa, Seiichi; Sugimoto, Seii; and Kitamura, Toshio, 4,486,512, Cl. 428-623.000.
Mittelsteadt, Robert A., to Control Data Corporation. Microwave oven quartz lamp heaters. 4,486,639, Cl. 219-10.55B.
Mitutoyo Mfg. Co., Ltd.: *See*—
Kimoto, Teruo; Yamaguchi, Yasuyuki; Nishimura, Takeji; and Mizuno, Satoshi, 4,486,891, Cl. 377-24.000.
Sakata, Hideo; Mizuno, Ichiro; and Nakahara, Masao, 4,485,556, Cl. 33-147.00G.
Shizuri, Akihiko, 4,485,557, Cl. 33-169.00R.
Miura, Ieaki: *See*—
Kato, Tetuo; Miura, Ieaki; Ashiba, Masahiro; and Imaizumi, Tomio, 4,485,900, Cl. 188-282.000.
Miura, Keiichi, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for controlling re-distribution of load on continuous rolling mill. 4,485,497, Cl. 364-469.000.
Miura, Norio: *See*—
Maeoka, Hidehiko; Shimizu, Etsuo; Suzuki, Yujiro; Shimiya, Keiji; and Miura, Norio, 4,486,486, Cl. 428-212.000.
Miwada, Satoshi: *See*—
Nakano, Haruji; and Miwada, Satoshi, 4,486,634, Cl. 200-148.00R.
Miyakawa, Susumu; Akado, Hajime; Taki, Yoshihiro; Hikida, Kenji; and Nakayama, Toshiaki, to Nippondenso Co., Ltd. Cyclone type air cleaner. 4,486,206, Cl. 55-337.000.
Miyake, Haruhisa; Suhara, Manabu; Mori, Hiroshi; and Saito, Yoshihiko, to Asahi Glass Company Ltd. Electrolytic cation exchange membrane. 4,486,277, Cl. 204-98.000.
Miyake, Toshio: *See*—
Sugimoto, Kaname; and Miyake, Toshio, 4,486,417, Cl. 424-180.000.
Miyake, Yutaka; Murata, Susumu; and Inaba, Takehiko, to Osaka University, President of. Supersonic externally pressurized gas bearing. 4,486,105, Cl. 384-114.000.
Miyashita, Shunitsu; and Somemiya, Akiyoshi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Resin composition. 4,486,568, Cl. 525-63.000.
Mizuguchi, Hiroyuki: *See*—
Matsumoto, Kunio; Izumi, Rokuro; Seijo, Hideji; and Mizuguchi, Hiroyuki, 4,486,549, Cl. 521-53.000.

Mizuhara, Howard, to GTE Products Corporation. Reactive metal-palladium-gold brazing alloys. 4,486,386, Cl. 420-508.000.
Mizuno, Ichiro: *See*—
Sakata, Hideo; Mizuno, Ichiro; and Nakahara, Masao, 4,485,556, Cl. 33-147.00G.
Mizuno, Nobutaka: *See*—
Moriguchi, Koichi; Iwamoto, Kenzi; Kawai, Hisasi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,485,626, Cl. 60-602.000.
Mizuno, Satoshi: *See*—
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Mizushima, Naoki: *See*—
Horiuchi, Teruo; Jona, Nobuo; Ohbu, Kazuo; and Mizushima, Naoki, 4,486,334, Cl. 252-312.000.
Mizutani, Makoto, to Idemitsu Kosan Company Limited. Laminated material. 4,486,497, Cl. 428-332.000.
Mobil Oil Corporation: *See*—
Bowes, Emmerson; Brandes, Susan D.; Farcasiu, Malvina; and Scott, Eric J. Y., 4,486,298, Cl. 208-253.000.
Chu, Chin-Chiun; and Kaeding, Warren W., 4,486,616, Cl. 585-466.000.
Horodysky, Andrew G.; and Kaminski, Joan M., 4,486,321, Cl. 252-46.300.
Horodysky, Andrew G.; and Kaminski, Joan M., 4,486,322, Cl. 252-48.200.
Horodysky, Andrew G.; and Kaminski, Joan M., 4,486,323, Cl. 252-48.400.
Murray, James G., 4,486,574, Cl. 525-333.400.
Oleck, Stephen M.; and Wilson, Robert C., Jr., 4,486,296, Cl. 208-111.000.
Reusswig, Gerhard H., 4,486,125, Cl. 405-217.000.
Ruehle, William H., 4,486,865, Cl. 367-24.000.
Schmiedel, Hans-Peter C., 4,486,390, Cl. 423-7.000.
Mochida, Haruo, to Nissan Motor Company, Limited. Engine starter circuit for automotive vehicle with automatic transmission. 4,485,694, Cl. 74-850.000.
Mochida, Haruo; and Namazue, Hirotoshi, to Nissan Motor Company, Limited; and Kokusan Kinzoku Kogyo Co., Ltd. Electronic door locking system for an automotive vehicle. 4,486,806, Cl. 361-172.000.
Mogaka, Zablon N.: *See*—
Wong, Victor W.; and Mogaka, Zablon N., 4,485,621, Cl. 60-274.000.
Mogyorosi, Istvanne : *See*—
Adonyi, Ivan; Farkas, Endre; Hegedus, Gyula; Kormendy, Attila; Mogyorosi, Istvanne ; Molnar, Geza; Sass, Szilard; Scholler, Laszlo ; Takacs, Lajos; and Vitez, Gyorgy, 4,486,825, Cl. 364-200.000.
Moilanen, Urpo, to A. Ahlstrom Osakeyhtio. Apparatus for cutting lumber. 4,485,705, Cl. 83-39.000.
Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, to Suzuki Motor Company Limited. Cylinder-number-controlled engine. 4,485,776, Cl. 123-198.00F.
Moldovan, Peter K.; and Hohensee, John C., to Eaton Corporation. Thermal mechanism with ambient compensating bimetal providing trip force. 4,486,733, Cl. 337-101.000.
Mole, Alain M.; and Savoyet, Jean-Louis P. J. Electronic identification system. 4,486,751, Cl. 340-825.310.
Molnar, Geza: *See*—
Adonyi, Ivan; Farkas, Endre; Hegedus, Gyula; Kormendy, Attila; Mogyorosi, Istvanne ; Molnar, Geza; Sass, Szilard; Scholler, Laszlo ; Takacs, Lajos; and Vitez, Gyorgy, 4,486,825, Cl. 364-200.000.
Molokov, Vladislav L.: *See*—
Gorbacheva, Irina N.; Sukhova, Ljudmila M.; Kozinda, Zinaida J.; Molokov, Vladislav L.; Antonov, Lev T.; Simonov, Vadim D.; Chertov, Viktor A.; Dvoskin, Semen I.; and Veseneva, Raisa S., 4,486,347, Cl. 534-797.000.
Monaghan, George J., to Energy Fibers Int'l Corp. Apparatus and methods of operation for converting fly ash into high quality mineral wool. 4,486,211, Cl. 65-1.000.
Monsanto Company: *See*—
Malon, Raymond F.; and Zampini, Anthony, 4,486,202, Cl. 55-158.000.
Montefluous S.p.A.: *See*—
Paffoni, Camillo; Balducci, Luigi; Bottaccio, Giorgio; and Pieroni, Marcello, 4,486,237, Cl. 106-308.00Q.
Monzo Gomez, Peregrin. Support for a tape which is adhesive on one or both of its faces. 4,486,263, Cl. 156-523.000.
Moore, Alan; Harman, Geoffrey E.; Rosser, David G.; and Clapham, Edward F., to Rolls-Royce Limited. Nose bullet anti-icing for gas turbine engines. 4,485,619, Cl. 60-39.093.
Moore, Eddie C.: *See*—
Moore, Jeff D.; and Moore, Eddie C., 4,485,692, Cl. 74-745.000.
Moore, Jack M.; and Sutch, Michael T., to Apache Powder Company. Booster container with isolated and open cord tunnels. 4,485,741, Cl. 102-331.000.
Moore, Jeff D.; and Moore, Eddie C. Auxiliary transmission. 4,485,692, Cl. 74-745.000.
Moore, William G.; Eckels, Phillip W.; and Jugan, Michael R., to Electric Power Research Institute, Inc. Superconducting rotor with end turn region intermittent support and cooling assembly. 4,486,676, Cl. 310-52.000.
Moran, George A.: *See*—
Meyer, Danny S.; and Moran, George A., 4,486,003, Cl. 251-328.000.
Morano, Michael W. Vehicular anti-theft device. 4,485,887, Cl. 180-287.000.
Moreau, Ronald: *See*—
Durot, Jean; and Moreau, Ronald, 4,486,361, Cl. 261-123.000.
Mori, Hiroshi: *See*—
Miyake, Haruhisa; Suhara, Manabu; Mori, Hiroshi; and Saito, Yoshihiko, 4,486,277, Cl. 204-98.000.
Mori, Kinji; and Ihara, Hirokazu, to Hitachi, Ltd. Method and apparatus for detecting a faulty computer in a multicomputer system. 4,486,829, Cl. 364-200.000.
Mori, Takanobu; Takahashi, Yoshinobu; and Murase, Haruo, to Toyota Jidosha Kabushiki Kaisha. Method of electrodeposition coating and apparatus therefor. 4,486,284, Cl. 204-181.00R.
Mori, Toshihito: *See*—
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; and Mori, Toshihito, 4,486,418, Cl. 424-180.000.
Morigaki, Masakazu; and Tsubota, Motohiko, to Fuji Photo Film Co., Ltd. Color diffusion transfer photographic element with redox dye releasers. 4,486,528, Cl. 430-218.000.
Moriguchi, Koichi; Iwamoto, Kenzi; Kawai, Hisasi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for controlling the ignition timing of an internal combustion engine having a turbocharger. 4,485,626, Cl. 60-602.000.
Morimoto, Kiyoshi, to Futaba Denshi Kogyo Kabushiki Kaisha. Electroluminescent device. 4,486,499, Cl. 428-336.000.
Morishita, Hirosada: *See*—
Takahashi, Akio; Ono, Masahiro; Tada, Ritsuro; Wajima, Motoyo; and Morishita, Hirosada, 4,486,583, Cl. 528-422.000.
Morishita, Sadao: *See*—
Matsushita, Toshihiko; Morishita, Sadao; and Hiraishi, Shigetoshi, 4,486,764, Cl. 346-209.000.
Morishita, Sumitada: *See*—
Matsumae, Hiroshi; Myojin, Hisayoshi; and Morishita, Sumitada, 4,485,569, Cl. 37-73.000.
Morisot, Bernard; and Taton, Michel, to Les Cables De Lyon. Housing for a coaxial directional coupler. 4,486,621, Cl. 174-50.000.
Morita, Takayuki; Muramatsu, Shigeru; and Fukuda, Tatemi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method and apparatus for supplying vacuum to a traveling-type servicing device serving a parent multi-station textile machine such as a spinning frame. 4,485,616, Cl. 57-261.000.
Morris, Edward, to American Cyanamid Company. Insect feeding station. 4,485,582, Cl. 43-131.000.
Morrison, Lowen R., Jr.; and Phillips, John H., to Procter & Gamble Company, The. Desolventizing process. 4,486,453, Cl. 426-478.000.
Morrow, Richard A.: *See*—
Troutner, Vernon H.; and Morrow, Richard A., 4,486,189, Cl. 604-5.000.
Moser, Hans, to Ciba-Geigy Corporation. Process for producing N-phosphonomethyiglycine. 4,486,358, Cl. 260-502.50F.
Motomura, Masaki: *See*—
Yamamoto, Hiroshi; Motomura, Masaki; and Kawaguchi, Keisuke, 4,485,650, Cl. 72-12.000.
Motorola, Inc.: *See*—
Edwards, Arthur J., 4,486,702, Cl. 322-28.000.
Jeffery, Philip A.; Reed, L. J.; and Spangler, Harold L., 4,486,880, Cl. 370-112.000.
McCallister, Ronald D.; and Shearer, Daniel, III, 4,486,846, Cl. 364-607.000.
Neely, Eric D., 4,486,674, Cl. 307-473.000.
Nguygen, Bich-Yen, 4,486,465, Cl. 427-85.000.
Ong, Daniel, 4,486,671, Cl. 307-264.000.
Puhl, Larry C.; and Smedinghoff, John F., 4,486,624, Cl. 179-2.0EB.
Mott, Richard A.: *See*—
Legg, Wesley E.; Ault, Russell L.; Mott, Richard A.; and Leewood, Alan R., 4,485,590, Cl. 49-501.000.
Movement Techniques Limited: *See*—
Mitchelson, David L., 4,486,095, Cl. 356-152.000.
MPD Technology Corporation: *See*—
Osborn, Donald H.; and Basley, Richard J., 4,486,225, Cl. 75-0.50R.
Mross, Wolf D.: *See*—
Hoelderich, Wolfgang; Mross, Wolf D.; and Schwarzmann, Matthias, 4,486,617, Cl. 585-640.000.
Mueller, Guenther, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Pocket structure for a foldable wing of an aircraft. 4,485,993, Cl. 244-135.00B.
Mueller, Karl F.; Heiber, Sonia J.; and Plankl, Walter L., to Ciba-Geigy Corporation. Strong, silicone containing polymers with high oxygen permeability. 4,486,577, Cl. 525-474.000.
Muir, Francis, to Chevron Research Company. Seismic exploration using non-impulsive vibratory sources activated by stationary, Gaussian codes, and processing that results in distortion-free final records particularly useful in stratigraphic trap determination. 4,486,866, Cl. 367-39.000.
Muka, Richard S.; and Russo, Carl J., to Varian Associates, Inc. Blackbody radiation source with constant planar energy flux. 4,486,652, Cl. 219-553.000.
Mukoyama, Yoshiyuki: *See*—
Hirai, Osamu; Aoyama, Tetsuya; and Mukoyama, Yoshiyuki, 4,486,308, Cl. 210-502.100.
Mulder, James R.; Pielemeier, John W.; and Snider, Joel M., to Whirlpool Corporation. Foreign objects trap for automatic washer. 4,485,645, Cl. 68-18.00F.

Mulet-Marquis, Yves H.: *See*—
Tardieu, Pierre R.; and Mulet-Marquis, Yves H., 4,486,176, Cl. 433-133.000.
Multi-Arc Vacuum Systems Inc.: *See*—
Brandolf, Henry E., 4,485,759, Cl. 118-503.000.
Multifibre Process Limited: *See*—
Lobley, Derek G., 4,486,399, Cl. 423-478.000.
Mumford, Eustace H.: *See*—
Irwin, George W.; and Mumford, Eustace H., 4,486,215, Cl. 65-360.000.
Munn, Richard J.: *See*—
Kane, Brian T.; and Munn, Richard J., 4,486,020, Cl. 273-191.00R.
Munro, James M.: *See*—
Pershing, David W.; Martin, George B.; and Munro, James M., 4,485,747, Cl. 110-347.000.
Munslow-Davies, Keith: *See*—
Begley, Maxwell G.; and Munslow-Davies, Keith, 4,485,530, Cl. 24-270.000.
Munzing, Rudolf; and Lehmann, Dieter, to Naxos-Union Schleifmittel und Schleifmaschinenfabrik. Grinding machine for crankshaft piss. 4,485,593, Cl. 51-105.0SP.
Murakami, Tadaki; Ikeda, Yasuhiko; and Ishii, Isao, to Mitsubishi Denki Kabushiki Kaisha. Process for preparing a heat resistant soft composite. 4,486,546, Cl. 501-153.000.
Murakami, Tamotsu: *See*—
Hara, Kenkichi; Yokoe, Shigeo; Oka, Kazuyoshi; Murakami, Tamotsu; and Hashimoto, Tsugifusa, 4,486,502, Cl. 428-405.000.
Murakami, Yasuo: *See*—
Furumura, Kyozaburo; Sugi, Hiromi; Murakami, Yasuo; and Asai, Hiromitsu, 4,486,026, Cl. 277-80.000.
Muramatsu, Shigeru: *See*—
Morita, Takayuki; Muramatsu, Shigeru; and Fukuda, Tatemi, 4,485,616, Cl. 57-261.000.
Murase, Haruo: *See*—
Mori, Takanobu; Takahashi, Yoshinobu; and Murase, Haruo, 4,486,284, Cl. 204-181.00R.
Murase, Makoto: *See*—
Kurauchi, Toshio; Takahashi, Hidero; Sato, Shigeyuki; Murase, Makoto; Takahara, Minoru; Ohi, Tamio; and Kamio, Takaki, 4,486,373, Cl. 264-142.000.
Murata, Fumiya: *See*—
Kitamura, Junji; Murata, Fumiya; and Nakamura, Noboru, 4,486,828, Cl. 364-200.000.
Murata, Hideki; Terada, Sadatugu; Tamaki, Kiyoshi; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Toner composition for the development of electrostatic latent images and a method of preparing the same. 4,486,559, Cl. 523-468.000.
Murata, Masanao: *See*—
Ohba, Toshitsugu; and Murata, Masanao, 4,486,694, Cl. 318-587.000.
Murata, Nakato: *See*—
Asahi, Taro; Higashino, Toshimitu; Ikoma, Noboru; Hanai, Masato; and Murata, Nakato, 4,486,668, Cl. 290-1.00B.
Murata, Susumu: *See*—
Miyake, Yutaka; Murata, Susumu; and Inaba, Takehiko, 4,486,105, Cl. 384-114.000.
Murphy, Alan P.; Kassamali, Ali; and Curry, John D., to Procter & Gamble Company, The. Bodies containing stabilized bleach activators. 4,486,327, Cl. 252-94.000.
Murphy, Robert. Stop pin. 4,485,531, Cl. 24-297.000.
Murray, David L.: *See*—
Gafford, Alexander T.; and Murray, David L., 4,485,939, Cl. 222-129.000.
Murray, James G., to Mobil Oil Corporation. Polymers of methyl ethenyl benzene. 4,486,574, Cl. 525-333.400.
Musil, Gary D.: *See*—
Sadlo, James L.; and Musil, Gary D., 4,486,738, Cl. 338-320.000.
Muth, Peter; Hartung, Wolfgang; Krake, Friedhelm; and Furche, Marion, to General Motors Corporation. Connecting element for linkages, especially automotive gearshift linkages. 4,485,688, Cl. 74-473.00R.
Mycynek, Victor G.: *See*—
Ireti, Wayne E.; and Mycynek, Victor G., 4,486,782, Cl. 358-197.000.
Myers, Howard: *See*—
Gordon, Harris K.; and Myers, Howard, 4,486,044, Cl. 294-31.200.
Myojin, Hisayoshi: *See*—
Matsumae, Hiroshi; Myojin, Hisayoshi; and Morishita, Sumitada, 4,485,569, Cl. 37-73.000.
N. V. Bekaert S. A.: *See*—
Crommelynck, Roger; and Quartier, Eddy, 4,486,255, Cl. 156-98.000.
Nagai, Kunio, to Sony Corporation. Television receiver for demodulating a two-language stereo broadcast signal. 4,486,897, Cl. 381-2.000.
Nagase, Hiroshi: *See*—
Okuyama, Toshiaki; Kubota, Yuzuru; and Nagase, Hiroshi, 4,486,824, Cl. 363-41.000.
Nagashima, Hideyuki, to Nissan Motor Company, Limited. Seat sliding device with movable rail retainer. 4,486,047, Cl. 296-65.00A.
Nagatomo, Hideaki: *See*—
Yasuda, Mitsuo; Nishizawa, Toshizo; Yuchi, Kazuhide; Kawahira, Hiroto; and Nagatomo, Hideaki, 4,485,634, Cl. 62-196.200.
Nagl, Gert: *See*—
Bauer, Wolfgang; Kuhlein, Klaus; and Nagl, Gert, 4,486,350, Cl. 260-245.860.
Nagoshi, Fumiya: *See*—
Fujita, Tamio; and Nagoshi, Fumiya, 4,486,569, Cl. 525-80.000.
Naito, Ryuichi, to Pioneer Electronic Corporation. Disc drive servo system. 4,486,795, Cl. 360-77.000.
Naito, Takayuki: *See*—
Narita, Yukio; Iimura, Seiji; Aburaki, Shimpei; Okumura, Jun; and Naito, Takayuki, 4,486,586, Cl. 544-022.000.
Nakada, Yoshinori: *See*—
Takeshima, Kiyoshi; and Nakada, Yoshinori, 4,485,533, Cl. 24-383.000.
Nakagami, Tatsuro; and Danno, Yoshiaki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Multi-cylinder internal combustion engine. 4,485,777, Cl. 123-198.00F.
Nakahara, Masao: *See*—
Sakata, Hideo; Mizuno, Ichiro; and Nakahara, Masao, 4,485,556, Cl. 33-147.00G.
Nakajima, Shigeru; and Ozaki, Masahiko, to Japan Exlan Company Limited. Method for effective combined use of gels having different activities. 4,486,311, Cl. 210-635.000.
Nakajima, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Copper-based alloy and method for producing the same. 4,486,250, Cl. 148-433.000.
Nakamura, Masayuki, to Kurita Machinery Manufacturing Company Limited. Slurry feeding device for use in filter press. 4,486,305, Cl. 210-227.000.
Nakamura, Noboru: *See*—
Kitamura, Junji; Murata, Fumiya; and Nakamura, Noboru, 4,486,828, Cl. 364-200.000.
Nakanishi, Hiroaki: *See*—
Kobayashi, Yoshiki; Maejima, Hideo; Bandoh, Tadaaki; and Nakanishi, Hiroaki, 4,486,834, Cl. 364-200.000.
Nakanishi, Kiyoshi: *See*—
Kanda, Mutsumi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,485,773, Cl. 123-188.00M.
Kanda, Mutsumi; Nakanishi, Kiyoshi; Okumura, Takeshi; Kotani, Takeshi; and Inoue, Tokuta, 4,485,774, Cl. 123-188.00M.
Kanda, Mutsumi; Nakanishi, Kiyoshi; Okumura, Takeshi; Kotani, Takeshi; and Inoue, Tokuta, 4,485,775, Cl. 123-188.00M.
Nakanishi, Seiki: *See*—
Matsumura, Kazuaki; and Nakanishi, Seiki, 4,486,817, Cl. 361-424.000.
Nakano, Haruji; and Miwada, Satoshi, to Hitachi, Ltd. Ground test switch for gas insulated switchgear. 4,486,634, Cl. 200-148.00R.
Nakano, Satoshi: *See*—
Endo, Kaichi; Katahira, Yoshihiro; Hayashi, Eiichi; and Nakano, Satoshi, 4,486,100, Cl. 366-76.000.
Nakano, Tomio: *See*—
Takemae, Yoshihiro; and Nakano, Tomio, 4,486,860, Cl. 365-222.000.
Nakano, Yoshiyuki: *See*—
Sato, Akihiko; Nakano, Yoshiyuki; and Tanaka, Etsuo, 4,486,084, Cl. 354-246.000.
Nakao, Hideo; Fujimoto, Koichi; Ishihara, Sadao; Sugawara, Shinichi; and Igarashi, Isamu, to Sankyo Company Limited. 7-[2-(2-Aminothiazol-4-yl)-2-(syn)-methoxyiminoacetamido]-3-methoxymethyl-3-cephem-4-carboxylates. 4,486,425, Cl. 424-246.000.
Nakasuji, Katsuyoshi; and Saruyama, Toshio, to Toray Silicone Co., Ltd. Room temperature-curable polyorganosiloxane compositions having resistance to soiling. 4,486,566, Cl. 524-788.000.
Nakata, Kazuo; Ishikawa, Tsuneo; Honma, Ichiro; Koyama, Arata; Hirai, Masaharu; and Amano, Masatoshi, to Ishihara Sangyo Kaisha, Ltd. Process for producing cobalt-containing magnetic iron oxide powder. 4,486,467, Cl. 427-129.000.
Nakatani, Mitsuo; Matsuyama, Haruhiko; Okunaka, Masaaki; Yokono, Hitoshi; Isogai, Tokio; Saitoh, Tadashi; and Midorikawa, Sumiyuki, to Hitachi, Ltd. Electrode material for semi-conductor devices. 4,486,232, Cl. 75-252.000.
Nakayama, Toshiaki: *See*—
Miyakawa, Susumu; Akado, Hajime; Taki, Yoshihiro; Hikida, Kenji; and Nakayama, Toshiaki, 4,486,206, Cl. 55-337.000.
Nakazawa, Mitsuo; Ballato, Arthur; and Lukaszek, Theodore J., to United States of America, Army. Stress compensated quartz resonator having ultra-linear frequency-temperature response. 4,486,682, Cl. 310-361.000.
Namazue, Hirotoshi: *See*—
Mochida, Haruo; and Namazue, Hirotoshi, 4,486,806, Cl. 361-172.000.
Nanishi, Kiyoshi: *See*—
Hosoi, Fumio; Sasaki, Takashi; Hagiwara, Miyuki; Egusa, Shigenori; and Nanishi, Kiyoshi, 4,486,280, Cl. 204-159.110.
Narita, Yukio; Iimura, Seiji; Aburaki, Shimpei; Okumura, Jun; and Naito, Takayuki, to Bristol-Myers Company. Cephalosporin derivatives. 4,486,586, Cl. 544-022.000.
Naruo, Kyoichi; Yamamoto, Nobuyuki; and Okita, Tsutomu, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,486,500, Cl. 428-336.000.
National Semiconductor Corporation: *See*—
Chen, Yung-Shih; Belani, Jagdish G.; and Sajja, Vijay, 4,486,511, Cl. 428-620.000.
National Set Screw Corporation: *See*—
Ewing, Peter D., 4,485,655, Cl. 72-68.000.
Navish, Francis W., Jr.: *See*—
Mendelsohn, Morris A.; Navish, Francis W., Jr.; and Rudd, George E., 4,485,719, Cl. 89-1.816.
Naxos-Union Schleifmittel und Schleifmaschinenfabrik: *See*—
Munzing, Rudolf; and Lehmann, Dieter, 4,485,593, Cl. 51-105.0SP.

Naya, Eizo; Horiuchi, Toshiaki; Takeya, Yasushi; Inagaki, Kouichi; Demizu, Michinosuke; and Okumura, Mitsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Contact for vacuum circuit breaker. 4,486,631, Cl. 200-144.00B.

NCR Corporation: *See*—
Duke, Jack R., 4,486,855, Cl. 364-900.000.

NEC Kansai, Ltd.: *See*—
Matsumura, Kazuaki; and Nakanishi, Seiki, 4,486,817, Cl. 361-424.000.

Neckel, Edmund: *See*—
Santefort, Richard A.; and Neckel, Edmund, 4,486,001, Cl. 251-61.300.

Neely, Eric D., to Motorola, Inc. Three state gate having enhanced transition to an active low. 4,486,674, Cl. 307-473.000.

Neff, James A., to Mac Valves, Inc. Four-way valve with integral flow controls, common exhaust, and cartridge type pilot valve. 4,485,846, Cl. 137-625.640.

Neff, Karl: *See*—
Lipinski, Reinhard; and Neff, Karl, 4,485,690, Cl. 74-609.000.

Neil, Iain A.; Lidwell, Michael O.; and McCreath, William, to Barr & Stroud Limited. Afocal telescopes. 4,486,069, Cl. 350-1.200.

Nelson, Robert L.; and Stough, Donald M., to Westinghouse Electric Corp. Jackshaft controlled boiler combustion control system. 4,486,166, Cl. 431-76.000.

Nelson, Terry L., to Leake & Nelson Co., The. Method of shimming spaced members. 4,485,607, Cl. 52-741.000.

Nerken Research Corp.: *See*—
Lewin, Gerhard; and Nir, Dan, 4,486,286, Cl. 204-192.00C.

Neste Oy: *See*—
Turunen, Olli; Mandell, Leo; Eklund, Vidar; Ekman, Kurt; and Huttunen, Jouko, 4,486,585, Cl. 536-30.000.

Neuman, Clayton L.; and Reum, Donald J. Apparatus for continuously filtering plastic melt with noninterruptive purge. 4,486,304, Cl. 210-107.000.

Neuzil, Richard W.: *See*—
Kulprathipanja, Santi; and Neuzil, Richard W., 4,486,618, Cl. 585-829.000.

Neville, Donald G. Recessed hinge with an adjustable pivot point. 4,485,524, Cl. 16-241.000.

New Nippon Electric Co., Ltd.: *See*—
Fujii, Masahiko; and Hirosawa, Yoshiaki, 4,485,784, Cl. 123-416.000.

New Super Laundry Mach. Co., Inc.: *See*—
Kamberg, Eduard, 4,485,573, Cl. 38-44.000.

New York Toy Corporation: *See*—
Rubin, Herbert, 4,486,016, Cl. 272-78.000.

New Zealand Milk Products, Inc.: *See*—
Walker, Neil J.; and Connolly, Philip B., 4,486,343, Cl. 260-112.00G.

Newman, Brian A.; Pae, Kook D.; and Scheinbeim, Jerry I., to United States of America, Navy. Piezoelectric transducer using electrically poled γ-phase nylon 11. 4,486,683, Cl. 310-800.000.

Newman, Neil F.; and Kowalski, Ronald C., to Exxon Research & Engineering Co. Process for the manufacture of halogenated elastomers. 4,486,575, Cl. 525-356.000.

Newton, Robert A.: *See*—
Flanders, James R.; Newton, Robert A.; and Berrill, William H., 4,485,512, Cl. 12-12.500.

Neyens, Edward J.: *See*—
Lycan, Goodwin A.; and Neyens, Edward J., 4,485,558, Cl. 33-169.00D.

NGK Insulators, Ltd.: *See*—
Usami, Jun; and Yamada, Hiroshi, 4,486,165, Cl. 431-76.000.

Nguyen, Kien L.; Keogh, Andrew J.; and Covey, Geoffrey H., to Australian Paper Manufacturers Limited. Alkali regeneration process. 4,486,394, Cl. 423-155.000.

N'Guyen, Quang L.: *See*—
Ser, Jean-Claude; N'Guyen, Quang L.; Millet, Catherine; and Szarazi, Bela, 4,486,448, Cl. 424-294.000.

Nguyen, Tinh: *See*—
Gaul, James M.; and Nguyen, Tinh, 4,486,557, Cl. 523-446.000.

Nguygen, Bich-Yen, to Motorola, Inc. Method for deposition on a semiconductor wafer. 4,486,465, Cl. 427-85.000.

Niemann, Debra H., to Dow Chemical Company, The. Fog-resistant olefin polymer films. 4,486,552, Cl. 523-169.000.

Niemeyer, Lutz; Perrenoud, Blaise; Ragaller, Klaus; Schade, Ekkehard; and Schaumann, Rolf, to BBC Brown, Boveri & Company, Limited. High-voltage power switch. 4,486,632, Cl. 200-148.00A.

Nilson, Carl A.; and Weir, Thomas J., to Hayes Albion Corporation. Transmission piston and method of making the same. 4,485,656, Cl. 72-84.000.

Nilsson, Margaretha, legal representative: *See*—
Nilsson, Philip, deceased; Eklund, Urban; and Gasslander, Jan-Erik, 4,485,861, Cl. 144-357.000.

Nilsson, Philip, deceased (by Nilsson, Margaretha, legal representative); Eklund, Urban; and Gasslander, Jan-Erik, to Kockums Industri AB. Method and apparatus for processing logs having a nonuniform profile. 4,485,861, Cl. 144-357.000.

Nippon Aluminium Mfg. Co. Ltd., The: *See*—
Kato, Shuichiro; Yabu, Yoshinori; and Kinoshita, Yoshihiro, 4,485,643, Cl. 62-519.000.

Nippon Electric Co., Ltd.: *See*—
Fushikida, Katsunobu, 4,486,899, Cl. 381-36.000.
Sugawara, Mitsutoshi, 4,486,718, Cl. 330-149.000.
Yamasaki, Toyosaka, 4,486,717, Cl. 331-4.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Koike, Tatsuhiro, 4,485,716, Cl. 84-1.030.

Nippon Kogaku K. K.: *See*—
Hashimoto, Noriyoshi; and Saiki, Kazuaki, 4,486,078, Cl. 350-520.000.

Nippon Kogaku K.K.: *See*—
Sato, Akihiko; Nakano, Yoshiyuki; and Tanaka, Etsuo, 4,486,084, Cl. 354-246.000.

Nippon Kokan Kabushiki Kaisha: *See*—
Sugimoto, Hiroyuki; Fukaya, Kazuo; and Kogughi, Yoji, 4,486,545, Cl. 501-123.000.

Nippon Metal Plating Co., Ltd.: *See*—
Mashiko, Masayoshi; and Suzuki, Keijiro, 4,486,513, Cl. 428-670.000.

Nippon Mining Co., Ltd.: *See*—
Mashiko, Masayoshi; and Suzuki, Keijiro, 4,486,513, Cl. 428-670.000.

Nippon Sanso Kabushiki Kaisha: *See*—
Sugimoto, Hiroyuki; Fukaya, Kazuo; and Kogughi, Yoji, 4,486,545, Cl. 501-123.000.

Nippon Seiko K.K.: *See*—
Furumura, Kyozaburo; Sugi, Hiromi; Murakami, Yasuo; and Asai, Hiromitsu, 4,486,026, Cl. 277-80.000.

Nippon Soken, Inc.: *See*—
Atsumi, Kinya; and Ito, Novuei, 4,486,651, Cl. 219-553.000.
Kodera, Masao; and Akita, Sigeyuki, 4,486,868, Cl. 367-140.000.
Moriguchi, Koichi; Iwamoto, Kenzi; Kawai, Hisasi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,485,626, Cl. 60-602.000.
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,485,622, Cl. 60-296.000.

Nippon Steel Corporation: *See*—
Yamamoto, Hiroshi; Motomura, Masaki; and Kawaguchi, Keisuke, 4,485,650, Cl. 72-12.000.

Nippon Zeon Co., Ltd.: *See*—
Shinohara, Takanobu; Anzai, Toshio; and Shinogaya, Tatsuji, 4,486,472, Cl. 427-239.000.

Nippondenso Co., Ltd.: *See*—
Asahi, Taro; Higashino, Toshimitu; Ikoma, Noboru; Hanai, Masato; and Murata, Nakato, 4,486,668, Cl. 290-1.00B.
Kato, Masaaki; and Akashi, Tetsuji, 4,485,787, Cl. 123-446.000.
Kojima, Yasuhumi; Yoshimi, Akiro; Kamiya, Michihiko; Ootsuka, Fumio; and Matsushima, Takeo, 4,486,837, Cl. 364-424.000.
Miyakawa, Susumu; Akado, Hajime; Taki, Yoshihiro; Hikida, Kenji; and Nakayama, Toshiaki, 4,486,206, Cl. 55-337.000.

Nir, Dan: *See*—
Lewin, Gerhard; and Nir, Dan, 4,486,286, Cl. 204-192.00C.

Nishida, Mitsuhiro: *See*—
Yamamoto, Sakuei; Inao, Hiroshi; Tokumitsu, Kiyonori; Nishida, Mitsuhiro; Ishikawa, Takatoshi; and Sakabe, Shigekazu, 4,486,677, Cl. 310-64.000.

Nishikawa, Yukiyasu: *See*—
Itoh, Kiyoshi; Nishikawa, Yukiyasu; Hoshika, Shuji; Hara, Masato; Ishiai, Hideyuki; Okamoto, Ikuzo; and Shindow, Osamu, 4,486,080, Cl. 351-206.000.

Nishimura, Takaaki; and Takase, Hatsuo, to Yanmar Diesel Engine Company Limited. Holding construction of a fuel injection valve in an internal combustion engine. 4,485,790, Cl. 123-468.000.

Nishimura, Takeji: *See*—
Kimoto, Teruo; Yamaguchi, Yasuyuki; Nishimura, Takeji; and Mizuno, Satoshi, 4,486,891, Cl. 377-24.000.

Nishimura, Toshimichi; and Noguchi, Takashi, to Sony Corporation. Drive circuits for driving digital circuits with a clock signal. 4,486,672, Cl. 307-268.000.

Nishimura, Yoshio, to Kabushiki Kaisha Daikin Seisakusho. Three stage damper disc with increased support for side plates. 4,485,907, Cl. 192-106.200.

Nishioka, Akira: *See*—
Matsuzaki, Narihide; Oshima, Tasuke; and Nishioka, Akira, 4,486,353, Cl. 260-412.400.

Nishiyama, Shinroku. Powdery dust separating apparatus in dust collector. 4,486,205, Cl. 55-302.000.

Nishizawa, Toshizo: *See*—
Yasuda, Mitsuo; Nishizawa, Toshizo; Yuchi, Kazuhide; Kawahira, Hiroto; and Nagatomo, Hideaki, 4,485,634, Cl. 62-196.200.

Nissan Motor Company, Limited: *See*—
Hayashi, Yoshimasa, 4,486,157, Cl. 417-534.000.
Mochida, Haruo, 4,485,694, Cl. 74-850.000.
Mochida, Haruo; and Namazue, Hirotoshi, 4,486,806, Cl. 361-172.000.
Nagashima, Hideyuki, 4,486,047, Cl. 296-65.00A.
Sugo, Yuko; Yamamoto, Tadahiro; Arai, Motomi; and Saito, Masaaki, 4,485,791, Cl. 123-478.000.
Udono, Jun; and Ideta, Yasufumi, 4,485,904, Cl. 192-0.094.

NL Industries, Inc.: *See*—
Carriere, David B.; and Lauzon, Rodrigue V., 4,486,316, Cl. 252-8.50C.

Nobuto, Toru: *See*—
Gocho, Nagahiro; Tojiki, Hitomi; Hayashi, Asao; Kambara, Koji; and Nobuto, Toru, 4,486,787, Cl. 358-296.000.

Noda, Teruaki: *See*—
Machida, Toyotaka; Noda, Teruaki; and Ikemura, Yuichi, 4,486,771, Cl. 358-29.000.

Nodera, Hisatoshi: *See*—
Kamiya, Fumio; and Nodera, Hisatoshi, 4,486,811, Cl. 361-280.000.

Noguchi, Haruo, to Colortronic Co., Ltd. Method and apparatus for filtering gases containing fine particles and cleaning a filter cloth of collected particles. 4,486,201, Cl. 55-96.000.

Noguchi, Takashi: *See*—
Nishimura, Toshimichi; and Noguchi, Takashi, 4,486,672, Cl. 307-268.000.

Noguchi, Yukio: *See*—
Asakura, Toshiyuki; Kobayashi, Hiroaki; and Noguchi, Yukio, 4,486,578, Cl. 525-535.000.

Nonomura, Keisaku; Matsuura, Masataka; Uede, Hisashi; Kishi, Kohei; and Kato, Hiroaki, to Sharp Kabushiki Kaisha. Segmented type liquid crystal display and driving method thereof. 4,486,748, Cl. 340-756.000.

Nordischer Maschinenbau Rud. Baader GmbH & CO KG: *See*—
Behnk, Gunter; Kohn, Herbert; and Pinkerneil, Gunther, 4,485,525, Cl. 17-55.000.

Nordson Corporation: *See*—
Frates, Paul S.; Jameson, Calvin R.; Petrecca, Peter J.; and Scholl, Charles H., 4,485,941, Cl. 222-146.500.
Merkel, Stephen L., 4,486,149, Cl. 417-32.000.
Petrecca, Peter J., 4,485,942, Cl. 222-146.500.
Spongh, Rolf T.; and Noss, Jeffrey S., 4,486,843, Cl. 364-513.000.

Norfield Manufacturing Co.: *See*—
Norlie, Bruce D.; and Knighten, Charles A., 4,485,857, Cl. 144-3.00R.

Norlie, Bruce D.; and Knighten, Charles A., to Norfield Manufacturing Co. Door processing machine. 4,485,857, Cl. 144-3.00R.

Norman, J. James, to Minister of National Defence of her Majesty's Canadian Government. Detection of toxic vapors. 4,485,665, Cl. 73-19.000.

Norsk Hydro a.s.: *See*—
Kjohl, Olav; Brekke, Ellen; and Egner, Arne O., 4,486,396, Cl. 423-265.000.

Northern Telecom Limited: *See*—
Chu, Pak J., 4,486,637, Cl. 200-340.000.
Watson, John C.; and Chan, Bing G., 4,486,804, Cl. 361-104.000.

Norton Christensen, Inc.: *See*—
Makohl, Friedhelm, 4,485,880, Cl. 175-107.000.

Norton Motors (1978) Limited: *See*—
Garside, David W., 4,486,159, Cl. 418-61.00A.

Nose, Noriyuki: *See*—
Endo, Kiyonobu; and Nose, Noriyuki, 4,486,096, Cl. 356-225.000.

Nosevich, Alexandr F.: *See*—
Shutov, Gennady M.; Erdman, Maya E.; Boltovsky, Valery S.; Solomakha, Adel I.; Nosevich, Alexandr F.; Pukhalsky, Miroslav E.; Kirichenko, Vladimir A.; and Derbyshkin, Valentin V., 4,486,475, Cl. 427-351.000.

Noss, Jeffrey S.: *See*—
Spongh, Rolf T.; and Noss, Jeffrey S., 4,486,843, Cl. 364-513.000.

Novey, Richard T. Adjustable supports for fishing rods and the like. 4,485,578, Cl. 43-21.200.

Novotny, Hans: *See*—
De Pous, Olivier; Richon, Dominique; and Novotny, Hans, 4,486,544, Cl. 501-96.000.

Nozawa, Ryoichiro; and Kiya, Nobuyuki, to Fujitsu Fanuc Limited. Manual data input device for a numerical control apparatus. 4,486,741, Cl. 340-365.00R.

Nunamaker, Charles S.: *See*—
Fromson, Robert E.; Skutch, Maria E.; Nunamaker, Charles S.; and Scheda, Francis A., 4,486,279, Cl. 204-129.500.

Nuttall, David A.; and Hong, Sung Ho, to Kimberly-Clark Corporation. Air/water hybrid former. 4,486,268, Cl. 162-123.000.

N.V. Safinco: *See*—
Callewaert, Danilo F., 4,486,345, Cl. 260-123.500.

NYBY Uddeholm AB: *See*—
Aslund, Christer, 4,486,385, Cl. 419-48.000.

O & K Orenstein & Koppel Aktiengesellschaft: *See*—
Lubrich, Wolfgang; and Hoffmann, Dieter, 4,486,049, Cl. 299-7.000.

O'Connor, George L.; Oswald, Ralph E.; and Heppding, Marc A., to G & R Instrument Company, Inc. Multi-phase interfacing system and method. 4,485,822, Cl. 128-719.000.

O'Connor, James A., to Essex Group, Inc. Method and apparatus for winding strand upon spools having tapered end flanges. 4,485,978, Cl. 242-25.00R.

Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, to Asahi Glass Company Ltd. Cathode and electrolysis. 4,486,278, Cl. 204-98.000.

Odenwald-chemie GmbH: *See*—
Wesch, Ludwig, 4,486,553, Cl. 523-179.000.

Oetjen, Jurgen; and Lunz, Erich, to INA Walzlager Schaeffler KG. Recirculating rolling bearing. 4,486,054, Cl. 308-6.00C.

Office National d'Etudes et de Recherche Aerospatiales: *See*—
Josso, Pierre; Lepetit, Pierre; Mazars, Pierre; and Massard, Marcel J., deceased, 4,486,233, Cl. 106-1.220.

Ogawa, Kyosuke: *See*—
Misumi, Teruo; Ogawa, Kyosuke; Kasbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Shirai, Shigeru, 4,486,521, Cl. 430-65.000.

Ogawara, Hiroshi: *See*—
Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; Funaki, Hirozo; Seimaya, Ryubun; Yamada, Yutaka; Tomono, Makoto; and Tarumi, Noriyoshi, 4,486,524, Cl. 430-109.000.

Ogilvie Mills Ltd.: *See*—
Linton, John H.; and Hussar, Nick, 4,486,451, Cl. 426-31.000.

Ogiro, Kenji; and Gotoh, Shinichi, to Hitachi Maxell, Ltd.; and Hitachi, Ltd. Recording tape cassette. 4,485,989, Cl. 242-198.000.

Ogiro, Kenji; and Gotoh, Shinichi, to Hitachi Maxell, Ltd.; and Hitachi, Ltd. Recording tape cassette. 4,485,990, Cl. 242-199.000.

Oguma, Tomio, to Aisin Seiki Kabushiki Kaisha. Supercharger control system for automobiles. 4,485,793, Cl. 123-559.000.

Ohashi, Yoshihiko: *See*—
Koyama, Katsumi; Kojima, Shigenori; Kogure, Tsuneo; Itano, Naoaki; and Ohashi, Yoshihiko, 4,486,841, Cl. 364-474.000.

Ohba, Toshitsugu; and Murata, Masanao, to Shinko Electric Co., Ltd. Process for changing a running direction of an electromagnetically guided driverless vehicle. 4,486,694, Cl. 318-587.000.

Ohbu, Kazuo: *See*—
Horiuchi, Teruo; Jona, Nobuo; Ohbu, Kazuo; and Mizushima, Naoki, 4,486,334, Cl. 252-312.000.

Ohi, Tamio: *See*—
Kurauchi, Toshio; Takahashi, Hidero; Sato, Shigeyuki; Murase, Makoto; Takahara, Minoru; Ohi, Tamio; and Kamio, Takaki, 4,486,373, Cl. 264-142.000.

Ohmura, Ryuichi, to Fuji Kogyo Co., Ltd. Reel mount assembly of cylindrical structure. 4,485,580, Cl. 43-22.000.

Oishi, Kiyohiko: *See*—
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,485,622, Cl. 60-296.000.

Oishi, Takashi, to Toray Industries, Inc. Methods of manufacturing pile fabric. 4,485,535, Cl. 28-162.000.

Oittinen, Pekka: *See*—
Kuusinen, Osmo; Rantanen, Mikko; Rintanen, Olavi; Pajunen, Reijo; Oittinen, Pekka; and Valtanen, Kalevi, 4,486,647, Cl. 219-137.0WM.

Oizumi, Masayuki: *See*—
Fushiki, Yasuo; Oizumi, Masayuki; Abe, Masaharu; and Watanabe, Makoto, 4,486,505, Cl. 428-416.000.

Oka, Kazuyoshi: *See*—
Hara, Kenkichi; Yokoe, Shigeo; Oka, Kazuyoshi; Murakami, Tamotsu; and Hashimoto, Tsugifusa, 4,486,502, Cl. 428-405.000.

Oka, Tateki: *See*—
Tanaka, Susumu; and Oka, Tateki, 4,485,760, Cl. 118-657.000.

Okabe, Tadao: *See*—
Okamoto, Yukio; Shinada, Shinichi; Okabe, Tadao; Ikarashi, Kazuhito; and Igarashi, Osamu, 4,486,747, Cl. 340-753.000.

Okajima, Kunihiko: *See*—
Kamide, Kenji; Okajima, Kunihiko; and Matsui, Toshihiko, 4,486,119, Cl. 106-177.000.

Okajima, Takahiro: *See*—
Takahashi, Hideyuki; Kenmotsu, Isami; Okajima, Takahiro; and Takahashi, Yoshio, 4,486,873, Cl. 369-77.100.

Okamoto, Ikuzo: *See*—
Itoh, Kiyoshi; Nishikawa, Yukiyasu; Hoshika, Shuji; Hara, Masato; Ishiai, Hideyuki; Okamoto, Ikuzo; and Shindow, Osamu, 4,486,080, Cl. 351-206.000.

Okamoto, Shigeo; and Shiozaki, Tomoharu, to Kanzaki Paper Manufacturing Co., Ltd. Self-contained type pressure sensitive record sheet. 4,486,762, Cl. 346-207.000.

Okamoto, Yukio; Shinada, Shinichi; Okabe, Tadao; Ikarashi, Kazuhito; and Igarashi, Osamu, to Hitachi, Ltd. Gas discharge display apparatus capable of emphasis display. 4,486,747, Cl. 340-753.000.

Okamoto, Yukio: *See*—
Itaya, Masahiko; Haneda, Satoshi; and Okamoto, Yukio, 4,486,089, Cl. 355-3.0DD.

Okaniwa, Kenichiro: *See*—
Koyama, Mikio; and Okaniwa, Kenichiro, 4,486,537, Cl. 436-170.000.

Okayama, Akira: *See*—
Chigasaki, Mitsuo; Otaka, Kiyoshi; Okayama, Akira; Onisawa, Kenichi; and Soeno, Ko, 4,486,245, Cl. 148-13.100.

Okazaki, Kunio: *See*—
Hashimoto, Kenshiro; Okazaki, Kunio; Tanabe, Toru; and Koguro, Toshio, 4,486,818, Cl. 362-65.000.

Okita, Tsutomu: *See*—
Naruo, Kyoichi; Yamamoto, Nobuyuki; and Okita, Tsutomu, 4,486,500, Cl. 428-336.000.

Okubo, Kazutomo, to Hokuryo Denko Co., Ltd. CATV Pay system. 4,486,773, Cl. 358-84.000.

Okumoto, Tadaoki; Sugimoto, Masatoshi; Kawazoe, Takashi; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Funato, Kenichi, to Toyoda Gosei Co., ltd.; and Toyota Jidosha Kabushiki Kaisha. Rubber hose comprising a liquid nitrile-butadiene copolymer incorporated into a partially hydrogenated unsaturated acrylonitrile-butadiene copolymer. 4,486,480, Cl. 428-36.000.

Okumura, Jun: *See*—
Narita, Yukio; Iimura, Seiji; Aburaki, Shimpei; Okumura, Jun; and Naito, Takayuki, 4,486,586, Cl. 544-022.000.

Okumura, Mitsuhiro: *See*—
Naya, Eizo; Horiuchi, Toshiaki; Takeya, Yasushi; Inagaki, Kouichi; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,486,631, Cl. 200-144.00B.

Okumura, Takeshi: *See*—
Kanda, Mutsumi; Nakanishi, Kiyoshi; Okumura, Takeshi; Kotani, Takeshi; and Inoue, Tokuta, 4,485,774, Cl. 123-188.00M.
Kanda, Mutsumi; Nakanishi, Kiyoshi; Okumura, Takeshi; Kotani, Takeshi; and Inoue, Tokuta, 4,485,775, Cl. 123-188.00M.

Okunaka, Masaaki: *See*—
Nakatani, Mitsuo; Matsuyama, Haruhiko; Okunaka, Masaaki; Yokono, Hitoshi; Isogai, Tokio; Saitoh, Tadashi; and Midorikawa, Sumiyuki, 4,486,232, Cl. 75-252.000.

Okuyama, Toshiaki; Kubota, Yuzuru; and Nagase, Hiroshi, to Hitachi, Ltd. PWM Converter with control circuit responsive to minimum holding current. 4,486,824, Cl. 363-41.000.

Olby, John K., to HMR Group Limited. Ceramic pigment. 4,486,236, Cl. 106-299.000.

Oleck, Stephen M.; and Wilson, Robert C., Jr., to Mobil Oil Corporation. Process for hydrocracking and dewaxing hydrocarbon oils. 4,486,296, Cl. 208-111.000.

Oline, James A.: *See*—
Meitzner, Erich F.; and Oline, James A., 4,486,313, Cl. 210-681.000.

Oliver, Bernard M. Method and means for improving performance of diesel engines. 4,485,778, Cl. 123-254.000.

Ollendick, Gary B.: *See*—
Heckel, George; and Ollendick, Gary B., 4,486,856, Cl. 364-900.000.

Olmstead, Richard E., Jr.; and Teeter, Terry E., to Eaton Corporation. Gear retainer. 4,485,686, Cl. 74-331.000.

Olson, Harry; and Borzoni, John M., to Littelfuse, Inc. Thermal actuated cut-off link. 4,486,736, Cl. 337-409.000.

Olson, Jerome A. Compressible spacing and sealing apparatus for siding panel joints. 4,485,600, Cl. 52-62.000.

Olson, Raymond N., to Sundstrand Corporation. Rotor for a permanent magnet generator. 4,486,678, Cl. 310-156.000.

Olympus Optical Company Limited: *See*—
Gocho, Nagahiro; Tojiki, Hitomi; Hayashi, Asao; Kambara, Koji; and Nobuto, Toru, 4,486,787, Cl. 358-296.000.
Yamaoka, Toshihide, 4,486,525, Cl. 430-122.000.

Omron Tateisi Electronics Co.: *See*—
Kamiya, Fumio; and Nodera, Hisatoshi, 4,486,811, Cl. 361-280.000.

Ong, Daniel, to Motorola, Inc. Voltage level shifting circuit. 4,486,671, Cl. 307-264.000.

Ongkiehong, Leo; and Huizer, Willem, to Shell Oil Company. Method for marine seismic exploration. 4,486,864, Cl. 367-23.000.

Onisawa, Kenichi: *See*—
Chigasaki, Mitsuo; Otaka, Kiyoshi; Okayama, Akira; Onisawa, Kenichi; and Soeno, Ko, 4,486,245, Cl. 148-13.100.

Ono, Masahiro: *See*—
Takahashi, Akio; Ono, Masahiro; Tada, Ritsuro; Wajima, Motoyo; and Morishita, Hirosada, 4,486,583, Cl. 528-422.000.

Ootani, Naoteru; Ishii, Takashi; and Ikeda, Hiroshi, to Kao Corporation. Liquid detergent composition containing succinic acid derivatives. 4,486,338, Cl. 252-545.000.

Ootsuka, Fumio: *See*—
Kojima, Yasuhumi; Yoshimi, Akiro; Kamiya, Michihiko; Ootsuka, Fumio; and Matsushima, Takeo, 4,486,837, Cl. 364-424.000.

Opanasenko, Walter W. Fish scaling apparatus. 4,485,526, Cl. 17-64.000.

Oppl, Gunther: *See*—
Schmitt, Gunther; Oppl, Gunther; Patel, Kirit; and Bieber, Theo, 4,485,617, Cl. 57-340.000.

Oral Ease Inc.: *See*—
Rosofsky, Paul M., 4,486,109, Cl. 401-24.000.

Orban nee Kelemen, Maria: *See*—
Baksa, Gyorgy; Boros, Jozsef; Horvath, Gyula; Ihasz, Balazs; Pais, Zoltan; Rainiss, Matyas; Sitkei, Ferenc; Solymar, Karoly; Toth, Bela; Vallo, Ferenc; Voro s, Istvan; Orban nee Kelemen, Maria; and Zoldi, Jozsef, 4,486,393, Cl. 423-121.000.

Orioon Corporation Ltd.: *See*—
Ranki, Tuula M.; and Soderlund Hans E., 4,486,539, Cl. 436-504.000.

Orlando, Daniel; Lund, David L.; and Waber, Glenn R., to GNB Batteries Inc. Means for welding intercell connections. 4,485,959, Cl. 228-102.000.

Ormesher, Robert J., to Aluminum Company of America. Metal scrap reclamation system. 4,486,228, Cl. 75-65.00R.

Ortho Diagnostic Systems Inc.: *See*—
Teipel, John W., 4,486,315, Cl. 210-772.000.

Orthoefer, Frank T.: *See*—
Bradford, Marion M.; Orthoefer, Frank T.; and Wright, Kenneth N., 4,486,458, Cl. 426-618.000.

Osaka Seiki Kabushiki Kaisha: *See*—
Kawaguchi, Kizo; and Matsuda, Teruo, 4,485,592, Cl. 51-58.000.

Osaka University, President of: *See*—
Miyake, Yutaka; Murata, Susumu; and Inaba, Takehiko, 4,486,105, Cl. 384-114.000.

Osato, Yoichi: *See*—
Misumi, Teruo; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Shirai, Shigeru, 4,486,521, Cl. 430-65.000.

Osborn, Donald H.; and Basley, Richard J., to MPD Technology Corporation. Production of highly reflective metal flake. 4,486,225, Cl. 75-0.50R.

Osegowitsch, Victor: *See*—
Boie, Immo; Kovacic, Guido; and Osegowitsch, Victor, 4,486,085, Cl. 354-312.000.

Oshima, Tasuke: *See*—
Matsuzaki, Narihide; Oshima, Tasuke; and Nishioka, Akira, 4,486,353, Cl. 260-412.400.

Osipov, Alexandr S.: *See*—
Pigalev, Evgeny Y.; Pavlov, Juvenaly V.; Osipov, Alexandr S.; and Kulikov, Vladimir L., 4,485,615, Cl. 57-261.000.

Oswald, Ralph E.: *See*—
O'Connor, George L.; Oswald, Ralph E.; and Heppdiag, Marc A., 4,485,822, Cl. 128-719.000.

Ota, Mitsuru: *See*—
Tomita, Eihachiro; and Ota, Mitsuru, 4,486,810, Cl. 361-306.000.

Ota, Yoshihiko: *See*—
Hirota, Akira; and Ota, Yoshihiko, 4,486,789, Cl. 358-330.000.

Otaka, Kiyoshi: *See*—
Chigasaki, Mitsuo; Otaka, Kiyoshi; Okayama, Akira; Onisawa, Kenichi; and Soeno, Ko, 4,486,245, Cl. 148-13.100.

Otouma, Hiroshi: *See*—
Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, 4,486,278, Cl. 204-98.000.

Ott, Gunter, to Siemens Aktiengesellschaft. Electric resistor which has low resistance and serves particularly for protecting an electric consumer against electric overload, and method for the manufacture thereof. 4,486,737, Cl. 338-22.00R.

Otter Controls Limited: *See*—
Foster, Terence J. C., 4,486,735, Cl. 337-348.000.

Otting, Billy J., to Otting International, Inc. Method and apparatus for dyeing of textile material. 4,485,508, Cl. 8-151.000.

Otting International, Inc.: *See*—
Otting, Billy J., 4,485,508, Cl. 8-151.000.

Otto, Arthur W., deceased: *See*—
Hudson, James H.; and Otto, Arthur W., deceased, 4,485,668, Cl. 73-40.50A.

Otto, Christine, administratrix: *See*—
Hudson, James H.; and Otto, Arthur W., deceased, 4,485,668, Cl. 73-40.50A.

Ouchi, Shigehiro: *See*—
Shoji, Hisataka; and Ouchi, Shigehiro, 4,485,838, Cl. 164-462.000.

Ouinones, Richard J.: *See*—
Vezirian, Edward; Ouinones, Richard J.; and Lockstedt, Alan W., 4,486,104, Cl. 384-95.000.

Outboard Marine Corporation: *See*—
Baltz, Gene F., 4,485,767, Cl. 123-41.150.
Cavil, David T., 4,486,181, Cl. 440-49.000.

Owens-Corning Fiberglas Corporation: *See*—
Legg, Wesley E.; Ault, Russell L.; Mott, Richard A.; and Leewood, Alan R., 4,485,590, Cl. 49-501.000.

Owens-Illinois, Inc.: *See*—
Irwin, George W.; and Mumford, Eustace H., 4,486,215, Cl. 65-360.000.
Kowal, Samuel J., 4,485,609, Cl. 53-331.500.
Kusz, Maximillian, 4,485,932, Cl. 215-222.000.
Reddy, Subba K., 4,486,366, Cl. 264-25.000.

Oximetrix, Inc.: *See*—
Beard, Robert, 4,485,810, Cl. 128-303.100.

Oy Lohja Ab: *See*—
Skarp, Jarmo I., 4,486,487, Cl. 428-216.000.

OY Partek AB: *See*—
Hytti, Tenvo T., 4,485,715, Cl. 83-875.000.

Oy Tampella AB: *See*—
Heikkila, Hannu, 4,485,693, Cl. 74-836.000.

Oz, Ferenc: *See*—
Szego , Andras; Kovats, Ferenc; Peterdi, Viktoria; Bone , Istvan; Gombos. Laszlo ; Oz, Ferenc; and Simon, Imre, 4,486,595, Cl. 548-306.000.

Ozaki, Masahiko: *See*—
Nakajima, Shigeru; and Ozaki, Masahiko, 4,486,311, Cl. 210-635.000.

Ozawa, Minoru: *See*—
Sonoda, Masakazu; Terashima, Takashi; and Ozawa, Minoru, 4,486,692, Cl. 318-258.000.

Ozen Corporation: *See*—
Koike, Eishi, 4,486,871, Cl. 369-67.000.

Pae, Kook D.: *See*—
Newman, Brian A.; Pae, Kook D.; and Scheinbeim, Jerry I., 4,486,683, Cl. 310-800.000.

Paffoni, Camillo; Balducci, Luigi; Bottaccio, Giorgio; and Pieroni, Marcello, to Montefluous S.p.A. Composite pigments and process for their preparation. 4,486,237, Cl. 106-308.00Q.

Page, Dennis; and Fox, Edward J., to Coal Industry (Patents) Limited. Method of and apparatus for sensing the ash content of coal. 4,486,894, Cl. 378-46.000.

Pais, Zoltan: *See*—
Baksa, Gyorgy; Boros, Jozsef; Horvath, Gyula; Ihasz, Balazs; Pais, Zoltan; Rainiss, Matyas; Sitkei, Ferenc; Solymar, Karoly; Toth, Bela; Vallo, Ferenc; Voro s, Istvan; Orban nee Kelemen, Maria; and Zoldi, Jozsef, 4,486,393, Cl. 423-121.000.

Pajevic, Paul D. Liquid sprayer. 4,485,971, Cl. 239-289.000.

Pajunen, Reijo: *See*—
Kuusinen, Osmo; Rantanen, Mikko; Rintanen, Olavi; Pajunen, Reijo; Ottinen, Pekka; and Valtanen, Kalevi, 4,486,647, Cl. 219-137.0WM.

Palamara, Bruno: *See*—
Palamara, Rocco; Palamara, Giovanni; and Palamara, Bruno, 4,485,604, Cl. 52-436.000.

Palamara, Giovanni: *See*—
Palamara, Rocco; Palamara, Giovanni; and Palamara, Bruno, 4,485,604, Cl. 52-436.000.

Palamara, Rocco; Palamara, Giovanni; and Palamara, Bruno. Modular building elements which form when assembled a network of conglomerate or reinforced concrete to form a bearing structure which is also anti-seismic. 4,485,604, Cl. 52-436.000.

Palm, Erich J., to U.S. Philips Corporation. Circuit for converting an input d.c. voltage into an output d.c. voltage. 4,486,823, Cl. 363-21.000.

Panicci, Richard L., to Kiddie Products, Inc. Cup with pivoting straw. 4,485,963, Cl. 229-7.00S.

Papadopoulos, Georges E. Winch brake assembly. 4,485,901, Cl. 192-8.00R.

Pape, Peter G.; and Willing, David N., to Dow Corning Corporation. Silicone foam-suppressant compositions. 4,486,336, Cl. 252-321.000.
Pardo, Richard J.; and Pardo, Warren A. Pressure vessel interlock. 4,485,936, Cl. 220-316.000.
Pardo, Warren A.: *See*—
Pardo, Richard J.; and Pardo, Warren A., 4,485,936, Cl. 220-316.000.
Parks, Randolph: *See*—
Gebhart, Steven A.; and Parks, Randolph, 4,485,949, Cl. 226-2.000.
Paroonagian, Doris L.: *See*—
Costales, Mark J.; Paroonagian, Doris L.; and Reifschneider, Walter, 4,486,421, Cl. 424-200.000.
Costales, Mark J.; Reifschneider, Walter; and Paroonagian, Doris L., 4,486,422, Cl. 424-200.000.
Parrotta, Michael A., to Beatrice Foods Co. Sublimable dye imaging of lottery ticket and commercial game coupon and the like. 4,486,033, Cl. 283-94.000.
Parsons, Frederick G., to Telemet American, Inc. Apparatus for receiving and displaying continuously updated data. 4,486,853, Cl. 364-900.000.
Parsons, Robert R.; McMahon, Richard; and Thewalt, Michael L., to University of British Columbia, Canada. Planar magnetron sputtering device. 4,486,289, Cl. 204-298.000.
Partus, Fred P.: *See*—
Lynch, Brian; MacChesney, John B.; Partus, Fred P.; and Simpson, Jay R., 4,486,214, Cl. 65-3.120.
Passavant-Werke AG & Co. KG: *See*—
Busse, Oswald; and Kleiper, Hugo, 4,486,306, Cl. 210-230.000.
Weiler, Walter, 4,486,307, Cl. 210-275.000.
Patel, Kirit: *See*—
Schmitt, Gunther; Oppl, Gunther; Patel, Kirit; and Bieber, Theo, 4,485,617, Cl. 57-340.000.
Patel, Narayan G.; and Wang, Chia-Lin J., to Du Pont de Nemours, E. I., and Company. Justicidin insecticidal and antiviral compounds. 4,486,445, Cl. 424-279.000.
Patz, Gary L.; and Davenport, Donald E., to Hexcel Corporation. Electrically conductive prepreg materials. 4,486,490, Cl. 428-245.000.
Paul, Patrick R. D. Ventilating, inflatable mattress. 4,485,505, Cl. 5-453.000.
Paul, Volker: *See*—
Reiser, Wolf; Draber, Wilfried; Buchel, Karl H.; Lurssen, Klaus; Frohberger, Paul-Ernst; and Paul, Volker, 4,486,218, Cl. 71-76.000.
Pavlov, Juvenaly V.: *See*—
Pigalev, Evgeny Y.; Pavlov, Juvenaly V.; Osipov, Alexandr S.; and Kulikov, Vladimir L., 4,485,615, Cl. 57-261.000.
Payne, George B., to Shell Oil Company. 6-Oxatricyclo[3.2.1.1^{3,8}]nonan-4-ol ethers and compositions and methods for the regulation of plant growth. 4,486,220, Cl. 71-88.000.
Pearson, William N.: *See*—
Cloud, David A.; Cloud, Charles E.; Pearson, William N.; and Hartman, Donn A., 4,486,452, Cl. 426-306.000.
Pellerin Milnor Corporation: *See*—
Pellerin, Norvin L.; Katzfey, James M.; and Garcia, Daniel P., 4,485,509, Cl. 8-158.000.
Pellerin, Norvin L.; Katzfey, James M.; and Garcia, Daniel P., to Pellerin Milnor Corporation. Continuous batch type washing machine and method for operating same. 4,485,509, Cl. 8-158.000.
Pennsylvania Engineering Corporation: *See*—
Hixenbaugh, Dennis L., 4,485,841, Cl. 137-315.000.
Pennwalt Corporation: *See*—
Kinsolving, C. Richard; and St. Georgiev, Vassil, 4,486,601, Cl. 564-254.000.
Sanchez, Jose, 4,486,580, Cl. 526-232.000.
Sandler, Stanley R.; and Bohrn, Joseph M., 4,486,551, Cl. 521-171.000.
Perdoncin, Giulio: *See*—
Giordano, Claudio; Minisci, Francesco; Meneghin, Mariano; and Perdoncin, Giulio, 4,486,352, Cl. 260-397.100.
Peregrim, Theodore J.; Kanter, Irving; and Mangiapane, Rosario, to Raytheon Company. Method of reducing angle noise in a radar. 4,486,756, Cl. 343-16.00M.
Perez, Manuel. Dual burner gas grill alignment device. 4,485,799, Cl. 126-39.00E.
Peri-Werk Artur Schworer GmbH & Co. KG: *See*—
Klaiss, Dieter, 4,486,000, Cl. 249-23.000.
Perradin, Guy. Process for making a false ceiling and false ceiling made by carrying out said process. 4,485,599, Cl. 52-222.000.
Perrenoud, Blaise: *See*—
Niemeyer, Lutz; Perrenoud, Blaise; Ragaller, Klaus; Schade, Ekkehard; and Schaumann, Rolf, 4,486,632, Cl. 200-148.00A.
Perry, Vernon L.: *See*—
Carmichael, D. Murphy; Davis, Walter L.; and Perry, Vernon L., 4,485,912, Cl. 198-382.000.
Pershing, David W.; Martin, George B.; and Munro, James M., to United States of America, Environmental Protection Agency. Reducing pollutant emissions by fines removal. 4,485,747, Cl. 110-347.000.
Pesa, Frederick A.: *See*—
Eshraghi, Reza; Pesa, Frederick A.; and Desmond, Mike J., 4,486,397, Cl. 423-306.000.
Pescarmona, Roberto D., to Fiat-Allis Europe S.p.A. Linkage system for a loader vehicle. 4,486,141, Cl. 414-697.000.
Peter Eckes, Firma: *See*—
Wiesenberger, Alfred; Kolb, Erich; and Engelhardt, Iris, 4,486,413, Cl. 424-177.000.
Peterdi, Viktoria: *See*—
Szego , Andras; Kovats, Ferenc; Peterdi, Viktoria; Bone , Istvan; Gombos, Laszlo ; Oz, Ferenc; and Simon, Imre, 4,486,595, Cl. 548-306.000.
Petrecca, Peter J., to Nordson Corporation. Apparatus for melting and dispensing thermoplastic material. 4,485,942, Cl. 222-146.500.
Petrecca, Peter J.: *See*—
Frates, Paul S.; Jameson, Calvin R.; Petrecca, Peter J.; and Scholl, Charles H., 4,485,941, Cl. 222-146.500.
Pettigrew, Robert M.; Bradbrook, John D.; and Wainwright, Ronald C. Optical data storage. 4,486,870, Cl. 369-32.000.
Pettit, George R., to Arizona Board of Reagents. Dolastatins A and B cell growth inhibitory substances. 4,486,414, Cl. 424-177.000.
Peugh, Herbert V.; and Ward, Albert W., to International Business Machines Corporation. Coating thickness and wedge geometry control for magnetic disks. 4,485,758, Cl. 118-52.000.
Pews, R. Garth, to Dow Chemical Company, The. Method of preparing tertiary carbinols. 4,486,612, Cl. 568-812.000.
Pews, Richard G., to Dow Chemical Company, The. Preparation of 2-t-butyl-5-chloropyrimidine. 4,486,590, Cl. 544-334.000.
Pews, Richard G.: *See*—
Lysenko, Zenon; and Pews, Richard G., 4,486,608, Cl. 568-466.000.
Pfaff Industriemaschinen GmbH: *See*—
Albrecht, Ernst; and Barth, Karl, 4,485,748, Cl. 112-110.000.
Pfeilstetter, Hans, to Convent Knabber-Geback GmbH & Co. KG. Nozzle for extruding a laminated food product. 4,486,163, Cl. 425-133.100.
Pfizer Inc.: *See*—
Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,486,428, Cl. 424-248.400.
Hamanaka, Ernest S., 4,486,411, Cl. 424-114.000.
Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,486,609, Cl. 568-734.000.
Walinsky, Stanley W., 4,486,581, Cl. 526-271.000.
Phalin, Thomas L.: *See*—
Gold, Vance B.; and Phalin, Thomas L., 4,485,663, Cl. 72-347.000.
Pharmacaps, Inc.: *See*—
Shah, Dilip; Borkan, Lionel; and Berry, Ira R., 4,486,412, Cl. 424-156.000.
Philip Morris Incorporated: *See*—
Rainer, Norman B.; and Siwiec, Dean M., 4,485,829, Cl. 131-291.000.
Phillips, John H.: *See*—
Morrison, Lowen R., Jr.; and Phillips, John H., 4,486,453, Cl. 426-478.000.
Phillips Petroleum Company: *See*—
Casperson, John R., 4,486,398, Cl. 423-450.000.
Kettinger, James G., 4,486,299, Cl. 208-356.000.
Stapp, Paul R., 4,485,872, Cl. 166-273.000.
Uraneck, Carl A.; and Burleigh, John E., 4,485,833, Cl. 152-209.00R.
Piccinelli, Piero: *See*—
Meneghin, Mariano; Piccinelli, Piero; and Giordano, Claudio, 4,486,599, Cl. 562-469.000.
Pichler, Ludwig: *See*—
Hurnaus, Rudolf; Griss, Gerhart; Sauter, Robert; Grell, Wolfgang; Kobinger, Walter; and Pichler, Ludwig, 4,486,433, Cl. 424-250.000.
Pielemeier, John W.: *See*—
Mulder, James R.; Pielemeier, John W.; and Snider, Joel M., 4,485,645, Cl. 68-18.00F.
Pieper, Werner: *See*—
Krause, Werner; and Pieper, Werner, 4,486,357, Cl. 260-502.40R.
Pierburg GmbH & Co. KG: *See*—
Schmitz, Eckehard, 4,486,688, Cl. 315-83.000.
Pieroni, Marcello: *See*—
Paffoni, Camillo; Balducci, Luigi; Bottaccio, Giorgio; and Pieroni, Marcello, 4,486,237, Cl. 106-308.00Q.
Piesen, Stephan; and Zajec, Joze, to Kleinewefers GmbH. Apparatus for manipulating rolls of convoluted paper or the like. 4,485,612, Cl. 53-504.000.
Pietsch, Hanns; and Hohmann, Volker, to Beiersdorf Aktiengesellschaft. Composition for the production of bandages, bandages produced therewith and method for the production thereof. 4,486,488, Cl. 428-219.000.
Pigalev, Evgeny Y.; Pavlov, Juvenaly V.; Osipov, Alexandr S.; and Kulikov, Vladimir L. Apparatus for piecing yarn to broken end of a fibrous strand in a spinning machine. 4,485,615, Cl. 57-261.000.
Pigeon, Raymond, to Rhone-Poulenc Specialites Chimiques. Photocuring of organopolysiloxanes devoid of Si-H bonds and containing no sites of activated ethylenic unsaturation. 4,486,281, Cl. 204-159.130.
Pijolat, Christophe: *See*—
Lalauze, Rene ; Pijolat, Christophe; and Couput, Jean-Paul, 4,485,667, Cl. 73-23.000.
Pilie, Roland J.; Shoemaker, Norris E.; and Akers, Charles K., to Calspan Corporation. Entrance and egress system for protective shelters and garments. 4,485,489, Cl. 2-2.000.
Pilie, Roland J.; Baum, Albert S.; and Russo, Anthony L., to Calspan Corporation. Interchange mechanism for multiple fasteners. 4,485,534, Cl. 24-384.000.
Pilie , Roland J.: *See*—
Akers, Charles K.; and Pilie , Roland J., 4,485,490, Cl. 2-2.000.
Pine, Charles K.: *See*—
Tippins, George W.; Thomas, John E.; Connolly, Richard S.; Pine, Charles K.; and Pottmeyer, Wayne G., 4,485,651, Cl. 72-12.000.

Pinkerneil, Gunther: *See*—
Behnk, Gunter; Kohn, Herbert; and Pinkerneil, Gunther, 4,485,525, Cl. 17-55.000.

Pioneer Electric Corporation: *See*—
Takahashi, Hideyuki; Kenmotsu, Isami; Okajima, Takahiro; and Takahashi, Yoshio, 4,486,873, Cl. 369-77.100.

Pioneer Electronic Corporation: *See*—
Naito, Ryuichi, 4,486,795, Cl. 360-77.000.

Piret, Philippe M. O. A.; and Krol, Thijs, to U.S. Philips Corporation. System for transmitting binary data via a plurality of channels by means of a convolutional code. 4,486,882, Cl. 371-45.000.

Pissiotas, Georg: *See*—
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,486,224, Cl. 71-105.000.

Pitney Bowes Inc.: *See*—
Tramposch, Herbert; Randmer, Glen J.; and Miller, Walter E., 4,485,881, Cl. 177-211.000.

Pitt, Gillies D.; Williamson, Roger J.; Batchelder, David N.; and Prabakaran, Arulanandam M., to ITT Industries, Inc. Fluid flowmeter. 4,485,679, Cl. 73-861.220.

Plankl, Walter L.: *See*—
Mueller, Karl F.; Heiber, Sonia J.; and Plankl, Walter L., 4,486,577, Cl. 525-474.000.

Planty, Audrey. Flea-vacuum. 4,485,583, Cl. 43-139.000.

Plemmons, J. Robert; and Rieck, Donald G. Automatic gas shut-off valve. 4,485,832, Cl. 137-38.000.

Plessey Overseas Limited: *See*—
Currall, William J. P., 4,486,060, Cl. 339-15.000.
Wheatley, Nigel J.; and Andrews, Martyn P., 4,486,831, Cl. 364-200.000.

Pletcher, Donald L., to Midland-Ross Corporation. Retainer for mechanical fastener member. 4,486,133, Cl. 411-84.000.

Ploix, Jean L.: *See*—
Fraleux, Jean; and Ploix, Jean L., 4,486,767, Cl. 357-23.000.

Ploppa, Jurgen, to H. Stoll GmbH and Company. High-flex insulated electrical cable. 4,486,623, Cl. 174-113.00R.

Plotz, Peter: *See*—
Koch, Ulrich; Plotz, Peter; Konig, Dieter; Langer, Jochen; Switaiski, Burkhardt; Schindler, H. Heinrich; and Wesselski, Willi, 4,486,123, Cl. 405-169.000.

Plumly, George W.: *See*—
Davis, David W.; and Plumly, George W., 4,486,689, Cl. 315-92.000.

PMC Industries, Inc.: *See*—
Urbanic, Robert F., 4,485,511, Cl. 10-96.00T.

Pneumo Corporation: *See*—
Tootle, James N., 4,485,725, Cl. 91-45.000.

Poe, David T., to General Motors Corporation. Low silhouette venting system for electric storage battery. 4,486,516, Cl. 429-82.000.

Pohl, Christopher A.: *See*—
Slingsby, Rosanne W.; and Pohl, Christopher A., 4,486,312, Cl. 210-656.000.

Polaroid Corporation: *See*—
Benton, Stephen A., 4,486,070, Cl. 350-3.850.
Carcia, Peter P.; and Coppa, Richard J., 4,486,087, Cl. 354-434.000.
Cardone, Paul A., 4,486,808, Cl. 361-235.000.

Poliniak, Eugene S., to RCA Corporation. High-density information disc lubricants. 4,486,325, Cl. 252-49.600.

Polychrome Corporation: *See*—
Kesselman, Jerome; Shelnut, James; and Wilkes, Alan, 4,486,518, Cl. 430-5.000.

Polysar Limited: *See*—
Fischer, Erhardt; and Edwards, Douglas C., 4,486,562, Cl. 524-156.000.

Porel, Louis-Claude, to Hydro Rene Leduc. Pump with spring loaded valve. 4,486,152, Cl. 417-270.000.

Posiviata, Richard W.; Kemper, Dennis; and Westhoff, William L., to Gates Rubber Company, The. Torsionally elastic power transmitting device and drive. 4,486,183, Cl. 474-94.000.

Potter, Frank. Rotatable base unit support for a file cabinet. 4,485,997, Cl. 248-544.000.

Pottmeyer, Wayne G.: *See*—
Tippins, George W.; Thomas, John E.; Connolly, Richard S.; Pine, Charles K.; and Pottmeyer, Wayne G., 4,485,651, Cl. 72-12.000.

Powell, James E., to Shell Oil Company. 6-Oxabicyclo[3.2.1]octane derivatives and compositions and methods for controlling plant growth. 4,486,219, Cl. 71-88.000.

Powell, Kenneth E., to International Business Machines Corporation. Adaptive rate card data reproducing and storing apparatus. 4,486,653, Cl. 235-449.000.

Power-Line Fastener Systems, Inc.: *See*—
Weis, Charles W., 4,485,952, Cl. 227-7.000.

Prabakaran, Arulanandam M.: *See*—
Pitt, Gillies D.; Williamson, Roger J.; Batchelder, David N.; and Prabakaran, Arulanandam M., 4,485,679, Cl. 73-861.220.

Pratley, Gerald, to British Petroleum Company p.l.c., The. Flare. 4,486,168, Cl. 431-202.000.

Pratley, Gerald: *See*—
McMurray, Robert; and Pratley, Gerald, 4,486,167, Cl. 431-114.000.

Pratt, Richard L.; and Thornton, Francis J., to International Business Machines Corporation. Maximum and minimum gas flow sensor. 4,486,744, Cl. 340-606.000.

Preimesberger, Ernest C.: *See*—
Champlin, Keith S.; Preimesberger, Ernest C.; Meyer, Larry A.; and Miller, George W., 4,486,852, Cl. 364-900.000.

Price, Robert B.; and Jakuba, Stanislav, to Jacobs Mfg. Company, The. Compression release engine retarder. 4,485,780, Cl. 123-321.000.

Pricone, Robert M.; and Heenan, Sidney A., to Amerace Corporation. Method and apparatus for embossing a precision optical pattern in a resinous sheet. 4,486,363, Cl. 264-1.400.

Prieb, William. Specific gravity grain grader. 4,486,300, Cl. 209-135.000.

Prietzel, Gunter; and Shultz, Rosemarie, to Siemens Aktiengesellschaft. Break contact arrangement for pullout-type switchgear. 4,486,636, Cl. 200-255.000.

Prince Corporation: *See*—
Marcus, Konrad H.; Flowerday, Carl W.; and Fleming, Dennis J., 4,486,819, Cl. 362-142.000.

Procter & Gamble Company, The: *See*—
Morrison, Lowen R., Jr.; and Phillips, John H., 4,486,453, Cl. 426-478.000.
Murphy, Alan P.; Kassamali, Ali; and Curry, John D., 4,486,327, Cl. 252-94.000.

Produits Chimiques Ugine Kuhlmann: *See*—
Gurtner, Bernard; Barral, Robert; and Bachelard, Roland, 4,486,402, Cl. 423-626.000.

Proff, Dwayne E.: *See*—
Baker, Irwin G.; Fuller, Robert L., Jr.; and Proff, Dwayne E., 4,486,128, Cl. 408-3.000.

PROMA Produkt-und Marketing-Gesellschaft m.b.H.: *See*—
Lipinski, Reinhard; and Neff, Karl, 4,485,690, Cl. 74-609.000.

Propper Manufacturing Co., Inc.: *See*—
Augurt, Thomas A., 4,486,387, Cl. 422-58.000.

Prusas, Zenon C., to Mead Corporation. Chemithermomechanical pulping process employing separate alkali and sulfite treatments. 4,486,267, Cl. 162-25.000.

Prutec Limited: *See*—
Blaine, Anthony F., 4,485,539, Cl. 29-91.100.

Pugh, Paul F. Wind generator kite system. 4,486,669, Cl. 290-44.000.

Puhl, Larry C.; and Smedinghoff, John F., to Motorola, Inc. Microprocessor controlled radiotelephone transceiver. 4,486,624, Cl. 179-2.0EB.

Pukhalsky, Miroslav E.: *See*—
Shutov, Gennady M.; Erdman, Maya E.; Boltovsky, Valery S.; Solomakha, Adel I.; Nosevich, Alexandr F.; Pukhalsky, Miroslav E.; Kirichenko, Vladimir A.; and Derbyshkin, Valentin V., 4,486,475, Cl. 427-351.000.

Punja, Nazim: *See*—
Bentley, Philip D.; and Punja, Nazim, 4,486,355, Cl. 260-465.00G.

Puntener, Alois, to Ciba-Geigy Corporation. Chrome-complex dyes and the production and use thereof for dyeing wool, polyamide. 4,486,196, Cl. 8-437.000.

Q-dot Corporation: *See*—
McCurley, Jack, 4,485,865, Cl. 165-76.000.

Quartier, Eddy: *See*—
Crommelynck, Roger; and Quartier, Eddy, 4,486,255, Cl. 156-98.000.

Quickview Partners: *See*—
Heckel, Paul C., 4,486,857, Cl. 364-900.000.

Quilitsch, Herbert: *See*—
Fritsch, Herwig; Koerner, Gotz; Quilitsch. Herbert; and Schamberg, Eckehard, 4,486,476, Cl. 427-387.000.

R. D. Cummins, Incorporated: *See*—
Cummins, Richard D., 4,486,112, Cl. 402-34.000.
Cummins, Richard D., 4,486,113, Cl. 402-80.00P.

Rabinow, Jacob. Key lock with a flying sidebar. 4,485,648, Cl. 70-364.00R.

Radbo, Berndt E.; and Janiszewski, Grzegorz K., to AB Volvo. Centrifugal friction clutch for motor vehicles with three position of operation. 4,485,905, Cl. 192-103.00A.

Radio Research & Technical Incorporated: *See*—
Tomita, Eihachiro; and Ota, Mitsuru, 4,486,810, Cl. 361-306.000.

Radvanyi nee Hegedus, Erzsebet: *See*—
Schwartz, Jozsef; Hornyak nee Hamori, Marya; Sagi, Janos; Marmarosi nee Kellner, Katalin; Radvanyi nee Hegedus, Erzsebet; Szigeti, Zoltan; Cseh, Edit; and Bujtas nee Tolgyes, Klara, 4,486,222, Cl. 71-100.000.

Radzio, Andrej: *See*—
Buchegger, Joachim; and Radzio, Andrej, 4,486,098, Cl. 356-445.000.

Ragaller, Klaus: *See*—
Niemeyer, Lutz; Perrenoud, Blaise; Ragaller, Klaus; Schade, Ekkehard; and Schaumann, Rolf, 4,486,632, Cl. 200-148.00A.

Ragle, Herbert U., to Burroughs Corporation. Electromechanical means for determining signature for reeled web. 4,485,674, Cl. 73-432.00R.

Raidel, John E. Heavy vehicle suspension assembly with free floating springs and axle stabilizing torque rod. 4,486,029, Cl. 280-682.000.

Raidt, Wolfgang: *See*—
Stroezel, Reinhold; Schwarze, Wilhelm W.; Roll, Karl; Hettich, Alfred; and Raidt, Wolfgang, 4,485,682, Cl. 73-862.360.

Rainer, Norman B.; and Siwiec, Dean M., to Philip Morris Incorporated. Process for increasing the filling power of tobacco. 4,485,829, Cl. 131-291.000.

Rainiss, Matyas: *See*—
Baksa, Gyorgy; Boros, Jozsef; Horvath, Gyula; Ihasz, Balazs; Pais, Zoltan; Rainiss, Matyas; Sitkei, Ferenc; Solymar, Karoly; Toth, Bela; Vallo, Ferenc; Voros, Istvan; Orban nee Kelemen, Maria; and Zoldi, Jozsef, 4,486,393, Cl. 423-121.000.

Rais, John M. Reusable plastic bottle handle. 4,486,043, Cl. 294-27.00H.

Ranco Incorporated: *See*—
Vivares, Alain, 4,485,566, Cl. 34-44.000.
Randall, Bruce E.; and Marshall, Jay K., to Sangamo Weston, Inc. Gain switching device with reduced error for watt meter. 4,486,707, Cl. 324-142.000.
Randmer, Glen J.: *See*—
Tramposch, Herbert; Randmer, Glen J.; and Miller, Walter E., 4,485,881, Cl. 177-211.000.
Ranki, Tuula M.; and Soderlund Hans E., to Orioon Corporation Ltd. Detection of microbial nucleic acids by a one-step sandwich hybridization test. 4,486,539, Cl. 436-504.000.
Rantanen, Mikko: *See*—
Kuusinen, Osmo; Rantanen, Mikko; Rintanen, Olavi; Pajunen, Reijo; Oittinen, Pekka; and Valtanen, Kalevi, 4,486,647, Cl. 219-137.0WM.
Rao, Dhanvada M., to United States of America, National Aeronautics and Space Administration. Leading edge flap system for aircraft control augmentation. 4,485,992, Cl. 244-90.00R.
RASCO Incorporated: *See*—
Schwaikert, Ralph A., 4,485,923, Cl. 206-508.000.
Rasmussen, Conrad K., to Horace Small Manufacturing Company. Method of fitting a ballistic panel carrying garment. 4,485,491, Cl. 2-2.500.
Rasmussen GmbH: *See*—
Sauer, Heinz, 4,486,034, Cl. 285-242.000.
Rasmussen, Robert, to Air-Mo Hydraulics Inc. Hydraulic chuck for threaded tube. 4,485,653, Cl. 72-58.000.
Rasmussen, Robert, to Air-Mo Hydraulics Inc. Hydraulic chuck for threaded tube. 4,485,654, Cl. 72-58.000.
Rassaian, Mostafa: *See*—
Roush, Roy W.; Rassaian, Mostafa; and Smith, Karl R., 4,485,743, Cl. 105-176.000.
Rau, Peter; and Schatz, Manfred, to Kraftwerk Union Aktiengesellschaft. Fuel assembly for a nuclear reactor. 4,486,384, Cl. 376-353.000.
Rauleder, Gebhard; and Waldmann, Helmut, to Bayer Aktiengesellschaft. Process for preparing pinacolone. 4,486,606, Cl. 568-385.000.
Raulerson, James; and Raulerson, Thomas J., to Raulerson Products Manufacturing Company, Inc. Ignitable fuel and fire starting composition. 4,485,584, Cl. 44-66.000.
Raulerson Products Manufacturing Company, Inc.: *See*—
Raulerson, James; and Raulerson, Thomas J., 4,485,584, Cl. 44-66.000.
Raulerson, Thomas J.: *See*—
Raulerson, James; and Raulerson, Thomas J., 4,485,584, Cl. 44-66.000.
Rausch, Georg, to Mannesmann Rexroth GmbH. Balanced pressure valve. 4,485,842, Cl. 137-489.000.
Ray, Michael D.: *See*—
Rudolph, Dale C.; and Ray, Michael D., 4,486,114, Cl. 403-27.000.
Ray, Walter W., Jr.: *See*—
Brunson, Amber N.; Brunson, Deighton E.; and Ray, Walter W., Jr., 4,486,844, Cl. 364-559.000.
Raychem Corporation: *See*—
Cornelius, Rajendra S.; Lusk, Hans E.; Martin, Albert R.; and Mendenhall, Mark D., 4,486,721, Cl. 333-1.000.
Lloyd, Richard B., 4,486,252, Cl. 156-51.000.
Raymond Kaiser Engineers Inc.: *See*—
Hendrych, Jiri, 4,486,138, Cl. 414-215.000.
Hendrych, Jiri, 4,486,139, Cl. 414-215.000.
Raytheon Company: *See*—
Ayasli, Yalcin, 4,486,719, Cl. 330-286.000.
Bowen, Robert F.; and Martel, Thomas J., 4,486,640, Cl. 219-10.55E.
Hill, Lyle M., 4,486,867, Cl. 367-87.000.
Peregrim, Theodore J.; Kanter, Irving; and Mangiapane, Rosario, 4,486,756, Cl. 343-16.00M.
RCA Corporation: *See*—
Christopher, Lauren A.; and Sprague, David L., 4,486,851, Cl. 364-770.000.
Coleman, Clyde F., 4,486,874, Cl. 369-77.200.
Hackett, Charles F.; Brauer, Eric A.; Kelleher, Kevin C.; and Wright, Richard R., 4,486,872, Cl. 369-71.000.
Hale, John R.; and Alexander, Robert J., 4,486,685, Cl. 313-417.000.
Hope, George P., 4,486,816, Cl. 361-399.000.
Kelleher, Kevin C., 4,486,875, Cl. 369-170.000.
Lyaobey, Morris, 4,486,723, Cl. 333-17.00M.
Poliniak, Eugene S., 4,486,325, Cl. 252-49.600.
Ream, Stanley L., to Laser Manufacturing Technologies, Inc. Apparatus for cooling laser windows. 4,486,886, Cl. 372-34.000.
Reddy, Subba K., to Owens-Illinois, Inc. Method of continuously producing heat shrinkable amorphous polystyrene foam layer. 4,486,366, Cl. 264-25.000.
Reed, Bradley O., to General Electric Company. Simplified hydromechanical steering transmission. 4,485,691, Cl. 74-687.000.
Reed, L. J.: *See*—
Jeffery, Philip A.; Reed, L. J.; and Spangler, Harold L., 4,486,880, Cl. 370-112.000.
Reed, Roger W. Wiper bar system. 4,485,588, Cl. 47-1.500.
Regie Nationale des Usines Renault: *See*—
Hermann, Jean-Paul, 4,486,842, Cl. 364-513.000.
Reifschneider, Walter: *See*—
Costales, Mark J.; Paroonagian, Doris L.; and Reifschneider, Walter, 4,486,421, Cl. 424-200.000.
Costales, Mark J.; Reifschneider, Walter; and Paroonagian, Doris L., 4,486,422, Cl. 424-200.000.
Reimann, Robert C., to United States of America, Energy. Heat exchanger bypass system for an absorption refrigeration system. 4,485,638, Cl. 62-476.000.
Reinauer, B. Franklin; and Dydo, Robert J., to Clear Meadow Research Co. Computerized measurement response system. 4,486,625, Cl. 179-2.00A.
Reinicke, Robert H., to Consolidated Controls Corporation. Precision medication dispensing system and method. 4,486,190, Cl. 604-67.000.
Reiser, Wolf; Draber, Wilfried; Buchel, Karl H.; Larssen, Klaus; Frohberger, Paul-Ernst; and Paul, Volker, to Bayer Aktiengesellschaft. 1-Vinyltriazole compounds and plant growth and fungicidal compositions. 4,486,218, Cl. 71-76.000.
REPA Feinstanzwerk GmbH: *See*—
Fohl, Artur, 4,485,985, Cl. 242-107.200.
Repasi, Janos: *See*—
Brendel nee Hajnoczki, Marta; Gulyas, Imre; Gyoker, Istvan; Zsupan, Kalman; Csorvassy, Istvan; Salamon, Zoltan; Somogyi, Gabor; Szentkiralyi, Istvan; Timar, Tibor; Biro nee Czapary, Eva; Fodor, Istvan; and Repasi, Janos, 4,486,359, Cl. 260-502.50F.
Restroom Facilities Corporation: *See*—
Kaufman, Charles E.; Shetler, Marvin R.; and Sharp, William M., 4,485,608, Cl. 52-745.000.
Reum, Donald J.: *See*—
Neuman, Clayton L.; and Reum, Donald J., 4,486,304, Cl. 210-107.000.
Reusswig, Gerhard H., to Mobil Oil Corporation. Modular arctic structures system. 4,486,125, Cl. 405-217.000.
Rexair, Inc.: *See*—
Kasper, Gary A., 4,485,518, Cl. 15-322.000.
Reynolds Metals Company: *See*—
Ward, Bennie R.; and Ashton, Richard F., 4,486,242, Cl. 148-11.50A.
Ward, Bennie R.; Agrawal, Suphal P.; and Ashton, Richard F., 4,486,244, Cl. 148-12.70A.
Rheinmetall GmbH: *See*—
Metz, Josef; and Winkler, Gert, 4,485,722, Cl. 89-43.00R.
Rhoads, Timothy W., to Dow Chemical Company, The. Styrenic foam and process therefor. 4,486,550, Cl. 521-79.000.
Rhodia AG: *See*—
Kliemann, Bruno; and Stoll, Martin, 4,486,365, Cl. 264-24.000.
Rhone-Poulenc Specialites Chimiques: *See*—
Pigeon, Raymond, 4,486,281, Cl. 204-159.130.
Rhunke, Rolf, to Ferag AG. Method and apparatus for opening multisheet products, especially printed products. 4,486,011, Cl. 270-55.000.
Ricciardi, Ronald J., to Acrison, Inc. Ingredient spreader. 4,485,973, Cl. 239-659.000.
Richard Wolf GmbH: *See*—
Bonnet, Ludwig; and Ditrolf, Ehrenfried, 4,486,680, Cl. 310-323.000.
Richards, Robert E., to J. A. Richards Company. Device for forming and bending metal. 4,485,664, Cl. 72-386.000.
Richardson Graphics Company: *See*—
Thomas, Daniel C.; and Sorkin, Jack L., 4,486,526, Cl. 430-156.000.
Richon, Dominique: *See*—
De Pous, Olivier; Richon, Dominique; and Novotny, Hans, 4,486,544, Cl. 501-96.000.
Richter, Detlev; and Burrig, Thomas, to U.S. Philips Corporation. X-Ray generator incorporating automatic correction of a dose-determining exposure parameter. 4,486,896, Cl. 378-108.000.
Ricoh Company, Ltd.: *See*—
Hashimoto, Mitsuru, 4,486,522, Cl. 430-79.000.
Kurisu, Norio; Matsuda, Tsutomu; Shimada, Masaru; and Kubo, Keishi, 4,486,527, Cl. 430-158.000.
Sasaki, Masaomi, 4,486,519, Cl. 430-58.000.
Tanaka, Yoshitsugu, 4,486,108, Cl. 400-639.100.
Taniguchi, Keishi; Iwata, Susumu; and Sakamoto, Hiroshi, 4,486,763, Cl. 346-209.000.
Ridley, Robert R.; and Fitzpatrick, Paul, to Ex-Cell-O Corporation. Tooth forming tool and method for splining tubular elements. 4,485,657, Cl. 72-88.000.
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Plemmons, J. Robert; and Rieck, Donald G., 4,485,832, Cl. 137-38.000.
Riedel, Horst: *See*—
Weber, Rudolf; and Riedel, Horst, 4,485,684, Cl. 73-863.120.
Rieger, Wolfhart: *See*—
Huber, Ernst; Rieger, Wolfhart; and Bolliger, Martin, 4,485,835, Cl. 164-430.000.
Riemann, Hanns-Helmut: *See*—
Bracker, Gerd-Peter; and Riemann, Hanns-Helmut, 4,485,745, Cl. 110-229.000.
Riess, Ronald L.; and Ames, Thomas J., to FMC Corporation. Combined metallic and flexible non-metallic pressure seal. 4,486,002, Cl. 251-214.000.
Rigoulot, Claude: *See*—
Fournier, Yves; Rigoulot, Claude; and Mainy, Pierre, 4,485,560, Cl. 33-178.00F.
Riihinen, Jaakko, to Valmet OY. Roll magnetically compensated and/or controlled of its deflection. 4,485,540, Cl. 29-116.0AD.
Riley, Brian, to Combustion Engineering, Inc. Vanadium oxide synthesis. 4,486,400, Cl. 423-592.000.
Riley, Clifford, to Du Pont de Nemours, E. I., and Company. Flow analysis. 4,486,097, Cl. 356-410.000.
Riley, Michael D. Testing system with test of subject matters, identification and security. 4,486,180, Cl. 434-65.000.

Rintanen, Olavi: *See*—
Kuusinen, Osmo; Rantanen, Mikko; Rintanen, Olavi; Pajunen, Reijo; Oittinen, Pekka; and Valtanen, Kalevi, 4,486,647, Cl. 219-137.0WM.
Rionda, Carlos; and Gottlieb, Robert, to Gang-Nail Systems, Inc. Connector plates. 4,486,115, Cl. 403-283.000.
Ripkens, Hans-Gerd: *See*—
Slomma, Heinz-Georg; and Ripkens, Hans-Gerd, 4,485,752, Cl. 112-221.000.
Ripoll, Angel; and Vidal, Antonio. Square stackable and palletizable drum. 4,485,924, Cl. 206-511.000.
Risch, Lothar; Feigt, Ingmar; and Tielert, Reinhard, to Siemens Aktiengesellschaft. Arrangement for contact-free measurement of electrical charge images in electro-radiographic recording methods. 4,486,778, Cl. 358-111.000.
Risdon Corporation: *See*—
Mattheis, Harley H.; and Khan, Agha M. A., 4,485,862, Cl. 145-3.100.
Risman, Per Olov G.: *See*—
Iverlund, Bertil G.; Risman, Per Olov G.; and Uddborn, Hans G., 4,485,564, Cl. 34-1.000.
Robert Bosch GmbH: *See*—
Duplat, Gerard; and Leblanc, Jean, 4,486,154, Cl. 417-487.000.
Gneiss, Heinz; and Romann, Peter, 4,486,643, Cl. 219-85.0CM.
Haubner, Georg; and Wesemeyer, Jurgen, 4,486,832, Cl. 364-200.000.
Hieber, Ernst; Kaden, Hans-Dieter; Martini, Helmut; and Ziegler, Gerhard, 4,486,173, Cl. 432-205.000.
Saur, Walter, 4,485,613, Cl. 53-551.000.
Stroezel, Reinhold; Schwarze, Wilhelm W.; Roll, Karl; Hettich, Alfred; and Raidt, Wolfgang, 4,485,682, Cl. 73-862.360.
van der Weide, Jouke, 4,485,792, Cl. 123-527.000.
Roberts, Ernest H.: *See*—
Lucchesi, Peter J.; Kurtz, Stuart J.; and Roberts, Ernest H., 4,486,377, Cl. 264-510.000.
Roberts, Harold A., to Augat Inc. Optical connector and splicing device using double diameter resilient rods. 4,486,072, Cl. 350-96.210.
Roca-Nierga, Manuel, to Spica S.p.A. Control of the pistons in injection pumps of internal-combustion engines. 4,486,155, Cl. 417-500.000.
Roccaforte, Harry I., to Champion International Corporation. Insect capturing device and blank therefor. 4,485,581, Cl. 43-121.000.
Rockwell International Corporation: *See*—
Chihak, Paul P., 4,486,752, Cl. 340-825.630.
Landt, Harvey L., 4,486,722, Cl. 333-17.00M.
Soclof, Sidney I., 4,485,551, Cl. 29-576.00W.
Rockwell-Rimoldi S.p.A.: *See*—
Ronchi, Adelio; and Sanvito, Roberto, 4,485,751, Cl. 112-163.000.
Rodgers, James D.: *See*—
Heilhecker, Joe K.; Rodgers, James D.; and Gaare, Steven C., 4,485,697, Cl. 81-57.200.
Rodriguez-Torres, Wilfredo, to Architectural Affiliates. Controllable detention window. 4,485,589, Cl. 49-38.000.
Roesch nee Apostolides, Androniki: *See*—
Friebe, Walter-Gunar; Kampe, Wolfgang; Roesch nee Apostolides, Androniki; and Schaumann, Wolfgang, 4,486,442, Cl. 424-267.000.
Rohloff, Rolf, to Siemens Aktiengesellschaft. Device for compensating for radial play of a ball bearing in a bearing bore. 4,486,055, Cl. 384-535.000.
Rohm and Haas Company: *See*—
Meitzner, Erich F.; and Oline, James A., 4,486,313, Cl. 210-681.000.
Rohr Industries, Inc.: *See*—
Millard, Ernest C.; and Brown, William D., 4,486,372, Cl. 264-137.000.
Rohto Pharmaceutical Co., Ltd.: *See*—
Yoshida, Akiyoshi; Kametaka, Shigeru; and Hayashi, Shin'ichi, 4,486,330, Cl. 252-174.120.
Rolando, Walter; Da Giau, Asco; and Zogno, Mario. Automatic foot washing apparatus. 4,485,503, Cl. 4-622.000.
Roll, Karl: *See*—
Stroezel, Reinhold; Schwarze, Wilhelm W.; Roll, Karl; Hettich, Alfred; and Raidt, Wolfgang, 4,485,682, Cl. 73-862.360.
Rolls-Royce Limited: *See*—
Moore, Alan; Harman, Geoffrey E.; Rosser, David G.; and Clapham, Edward F., 4,485,619, Cl. 60-39.093.
Romann, Peter: *See*—
Gneiss, Heinz; and Romann, Peter, 4,486,643, Cl. 219-85.0CM.
Romer, Bendt W.; and Lorentzen, Jens O., to Danfoss A/S. Refrigerator with encapsulated motor compressor. 4,486,153, Cl. 417-313.000.
Romy, Dominique: *See*—
Gravelle, Alain; Marini, Jean; and Romy, Dominique, 4,486,382, Cl. 376-216.000.
Ronchi, Adelio; and Sanvito, Roberto, to Rockwell-Rimoldi S.p.A. Method and apparatus for seaming opposed garment edges simultaneously. 4,485,751, Cl. 112-163.000.
Rooker, Mitchel L., to Combustion Engineering, Inc. Inlet momentum absorber for fluid separation. 4,486,203, Cl. 55-174.000.
Rosaen, Borje O.: *See*—
Vander Kaay, Henry A.; and Rosaen, Borje O., 4,485,844, Cl. 137-515.700.
Rosaen, Lars O., to Universal Filters, Inc. Tamper-proof cover for fluid flow monitor. 4,485,672, Cl. 73-273.000.
Rosedale Product, Inc.: *See*—
Vander Kaay, Henry A.; and Rosaen, Borje O., 4,485,844, Cl. 137-515.700.
Rosedale Products, Inc.: *See*—
Skarp, Jarmo I., 4,486,487, Cl. 428-216.000.
Skarp, Jarmo I., 4,486,487, Cl. 428-216.000.
Skarp, Jarmo I., 4,486,487, Cl. 428-216.000.
Rosinski, Joseph: *See*—
Schenone, Carl E.; and Rosinski, Joseph, 4,486,199, Cl. 48-197.00R.
Rosofsky, Paul M., to Oral Ease Inc. Toothbrush assembly combining replaceable brush assembly with massaging device. 4,486,109, Cl. 401-24.000.
Rosser, David G.: *See*—
Moore, Alan; Harman, Geoffrey E.; Rosser, David G.; and Clapham, Edward F., 4,485,619, Cl. 60-39.093.
Rota, Guido. Apparatus for the continuous manufacture of buttermilk curd. 4,485,731, Cl. 99-453.000.
Rothfuss, Robert G., to Senco Products, Inc. Surgical stapling instrument and cartridge therefor. 4,485,953, Cl. 227-19.000.
Roullet, Alain, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Method and device for injecting a liquefied pressurizing gas into containers. 4,485,854, Cl. 141-4.000.
Roush, David M.: *See*—
Van Saun, William A.; and Roush, David M., 4,486,588, Cl. 544-172.000.
Roush, Roy W.; Rassaian, Mostafa; and Smith, Karl R., to General Motors Corporation. High efficiency semi-articulated railway power truck. 4,485,743, Cl. 105-176.000.
Roussel Uclaf: *See*—
Bianchi, Mario; and Barzaghi, Fernando, 4,486,429, Cl. 424-248.500.
Clemence, Francois; Le Martret, Odile; and Delevallee, Francoise, 4,486,438, Cl. 424-258.000.
Rubin, Herbert, to New York Toy Corporation. Toy punching bag support construction. 4,486,016, Cl. 272-78.000.
Rubner, Michael F.; and Cukor, Peter, to GTE Laboratories, Incorporated. Selective metal plating onto poly(phenylene sulfide) substrates. 4,486,463, Cl. 427-53.100.
Rudd, George E.: *See*—
Mendelsohn, Morris A.; Navish, Francis W., Jr.; and Rudd, George E., 4,485,719, Cl. 89-1.816.
Rudolf Hell GmbH: *See*—
Klie, Jurgen; and Wellendorf, Klaus, 4,486,772, Cl. 358-80.000.
Rudolph, Dale C.; and Ray, Michael D., to Technicare Corporation. Interchangeable component identification system. 4,486,114, Cl. 403-27.000.
Rudolph, Kathleen, executrix: *See*—
Strutz, Carl, Jr.; Strutz, Frank C.; Rudolph, Rome R., deceased; and Rudolph, Kathleen, executrix, 4,485,736, Cl. 101-129.000.
Rudolph, Rome R., deceased: *See*—
Strutz, Carl, Jr.; Strutz, Frank C.; Rudolph, Rome R., deceased; and Rudolph, Kathleen, executrix, 4,485,736, Cl. 101-129.000.
Ruehle, William H., to Mobil Oil Corporation. Pressure and velocity detectors for seismic exploration. 4,486,865, Cl. 367-24.000.
Ruffini, Robert S. Inductor, coating and method. 4,486,641, Cl. 219-10.790.
Rupprecht, Hans S.: *See*—
Magdo, Ingrid E.; and Rupprecht, Hans S., 4,485,552, Cl. 29-577.00C.
Russo, Anthony L.: *See*—
Pilie, Roland J.; Baum, Albert S.; and Russo, Anthony L., 4,485,534, Cl. 24-384.000.
Russo, Carl J.: *See*—
Muka, Richard S.; and Russo, Carl J., 4,486,652, Cl. 219-553.000.
Russo, Frank D.: *See*—
Leech, Edward J.; and Russo, Frank D., 4,486,466, Cl. 427-96.000.
Ryan, Joyce: *See*—
Knott, Christine A.; and Ryan, Joyce, 4,486,328, Cl. 252-117.000.
S.A.E.S. Getters S.p.A.: *See*—
della Porta, Paolo, 4,486,686, Cl. 313-481.000.
Saam, John C.: *See*—
Bowman, Sheryl A.; Falender, James R.; Lipowitz, Jonathan; and Saam, John C., 4,486,567, Cl. 524-863.000.
Sach, George S., to Smith Kline & French Laboratories Limited. Histamine H_1-antagonists. 4,486,434, Cl. 424-251.000.
Sachs-Systemtechnik GmbH: *See*—
Lutz, Dieter; and Thieler, Wolfgang, 4,485,906, Cl. 192-106.100.
Sadlo, James L.; and Musil, Gary D., to General Electric Ceramics, Inc. High reliability electrical components. 4,486,738, Cl. 338-320.000.
Saeki, Yukihiro; and Uchida, Kazuyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Bus line drive circuit. 4,486,753, Cl. 340-825.910.
Sagan, Stanley S.; and Kratz, Jay L., to Westinghouse Electric Corp. Joint for joining clad materials. 4,485,960, Cl. 228-107.000.
Sagi, Janos: *See*—
Schwartz, Jozsef; Hornyak nee Hamori, Marya; Sagi, Janos; Marmarosi nee Kellner, Katalin; Radvanyi nee Hegedus, Erzsebet; Szigeti, Zoltan; Cseh, Edit; and Bujtas nee Tolgyes, Klara, 4,486,222, Cl. 71-100.000.
Sahara, Seiichi: *See*—
Okumoto, Tadaoki; Sugimoto, Masatoshi; Kawazoe, Takashi; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Funato, Kenichi, 4,486,480, Cl. 428-36.000.
Saiki, Kazuaki: *See*—
Hashimoto, Noriyoshi; and Saiki, Kazuaki, 4,486,078, Cl. 350-520.000.
St. Georgiev, Vassil: *See*—
Kinsolving, C. Richard; and St. Georgiev, Vassil, 4,486,601, Cl. 564-254.000.

St. John, Robert P.; and Lloyd, William A., to Xerox Corporation. Web tracking system. 4,485,982, Cl. 242-57.100.
St. Louis University: *See*—
Lambowitz, Alan M., 4,486,533, Cl. 435-172.300.
Saito, Hiroshi: *See*—
Yamamuro, Toshikazu; Shiotsubo, Masami; and Saito, Hiroshi, 4,486,124, Cl. 405-184.000.
Saito, Masaaki: *See*—
Sugo, Yuko; Yamamoto, Tadahiro; Arai, Motomi; and Saito, Masaaki, 4,485,791, Cl. 123-478.000.
Saito, Seitoku, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,486,498, Cl. 428-333.000.
Saito, Yoshihiko: *See*—
Miyake, Haruhisa; Suhara, Manabu; Mori, Hiroshi; and Saito, Yoshihiko, 4,486,277, Cl. 204-98.000.
Saitoh, Keishi: *See*—
Misumi, Teruo; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Shirai, Shigeru, 4,486,521, Cl. 430-65.000.
Saitoh, Tadashi: *See*—
Nakatani, Mitsuo; Matsuyama, Haruhiko; Okunaka, Masaaki; Yokomo, Hitoshi; Isogai, Tokio; Saitoh, Tadashi; and Midorikawa, Sumiyuki, 4,486,232, Cl. 75-252.000.
Sajja, Vijay: *See*—
Chen, Yung-Shih; Belani, Jagdish G.; and Sajja, Vijay, 4,486,511, Cl. 428-620.000.
Saka, Tsutomu; Kamiyama, Toshihiro; Endo, Hiroyuki; and Ikenoue, Yutaka, to Honda Giken Kogyo Kabushiki Kaisha; and Hitachi Powdered Metals Company, Ltd. Material for valve-actuating mechanism of internal combustion engine. 4,485,770, Cl. 123-90.390.
Sakabe, Shigekazu: *See*—
Yamamoto, Sakuei; Inao, Hiroshi; Tokumitsu, Kiyonori; Nishida, Mitsuhiro; Ishikawa, Takatoshi; and Sakabe, Shigekazu, 4,486,677, Cl. 310-64.000.
Sakaguchi, Katsuyoshi: *See*—
Hasegawa, Akira; and Sakaguchi, Katsuyoshi, 4,486,162, Cl. 425-48.000.
Sakai, Tadashi: *See*—
Tsukada, Ichiro; Kato, Yoshio; and Sakai, Tadashi, 4,486,170, Cl. 431-315.000.
Sakakibara, Naoji, to Aisin Seiki Kabushiki Kaisha. Constant speed control devices for vehicles. 4,485,782, Cl. 123-389.000.
Sakakibara, Susumu: *See*—
Sugiyama, Hiroyuki; Abe, Ryozo; and Sakakibara, Susumu, 4,486,790, Cl. 358-342.000.
Sakamoto, Hiroshi: *See*—
Taniguchi, Keishi; Iwata, Susumu; and Sakamoto, Hiroshi, 4,486,763, Cl. 346-209.000.
Sakamoto, Hitoshi, to Sony Corporation. Apparatus and method for controlling the position of a rotary head. 4,486,796, Cl. 360-77.000.
Sakamoto, Noriaki, to Tokyo Shibaura Kenki Kabushiki Kaisha. Cooling device for a refrigerator compressor. 4,485,639, Cl. 62-505.000.
Sakano, Riichi, to Sanden Corporation. Control device for a compressor in a refrigerating system. 4,485,635, Cl. 62-209.000.
Sakata, Hideo; Mizuno, Ichiro; and Nakahara, Masao, to Mitutoyo Mfg. Co., Ltd. Micrometer gauge. 4,485,556, Cl. 33-147.00G.
Sakioka, Johnny K., Jr.: *See*—
Bracken, William J.; and Sakioka, Johnny K., Jr., 4,485,898, Cl. 188-250.00B.
Sakurai, Kiyoshi; Ishi, Akira; and Abe, Yoshihiro, to Fuji Photo Film Co., Ltd. Tape guide for magnetic recording tape cassettes and magnetic recording tape cassettes containing same. 4,486,320, Cl. 252-12.600.
Salamon, Zoltan: *See*—
Brendel nee Hajnoczki, Marta; Gulyas, Imre; Gyoker, Istvan; Zaupan, Kalman; Csorvassy, Istvan; Salamon, Zoltan; Somogyi, Gabor; Szentkiralyi, Istvan; Timar, Tibor; Biro nee Czapary, Eva; Fodor, Istvan; and Repasi, Janos, 4,486,359, Cl. 260-502.50F.
Saljuk, Viktor A.: *See*—
Chernousov, Alexandr F.; Domrachev, Sergei A.; Ivanov, Alexei I.; Malyshev, Boris N.; Saljuk, Viktor A.; Skobelkin, Oleg K.; and Brekhov, Evgeny I., 4,485,811, Cl. 128-303.100.
Salzburg, Herbert: *See*—
Krist, Otto; and Salzburg, Herbert, 4,486,542, Cl. 501-17.000.
Samejima, Masayoshi; Hirata, Goichi; Koida, Yoshiyuki; and Kida, Akira, to Tanabe Seiyaku Co., Ltd. Process for preparing ethylcellulose microcapsules. 4,486,471, Cl. 427-213.300.
Samson, Joseph E.: *See*—
Wolff, Kenneth T.; Samson, Joseph E.; and Baty, Kurt F., 4,486,826, Cl. 364-200.000.
Sanborn, Wesley C.: *See*—
Gilley, James E.; Vigue, Henry R.; and Sanborn, Wesley C., 4,485,610, Cl. 53-452.000.
Sanchez, Jose, to Pennwalt Corporation. Process for using t-alkyl peroxy-2-alkyl-2-arylacetates as free-radical initiators and curing catalysts. 4,486,580, Cl. 526-232.000.
Sancken, Ernest H.: *See*—
Silverthorn, Charles R.; and Sancken, Ernest H., 4,485,977, Cl. 241-230.000.
Sandel, Dan. Sterilizable foam support tray for medical instruments. 4,485,919, Cl. 206-370.000.
Sandell, Lionel S., to Du Pont de Nemours, E. I., and Company. Stabilization of thickened aqueous fluids. 4,486,317, Cl. 252-8.50A.
Sanden Corporation: *See*—
Sakano, Riichi, 4,485,635, Cl. 62-209.000.
Sandler, Stanley R.; and Bohen, Joseph M., to Pennwalt Corporation. Method of preparing a flame retarded polyurethane using a flame retarded halogenated polyol. 4,486,551, Cl. 521-171.000.
Sangamo Weston, Inc.: *See*—
Randall, Bruce E.; and Marshall, Jay K., 4,486,707, Cl. 324-142.000.
Sankin Industry Co., Ltd.: *See*—
Yamaguchi, Akiya; Stark, Marvin M.; and Soelberg, Kenneth B., 4,485,823, Cl. 128-739.000.
Sankyo Company Limited: *See*—
Nakao, Hideo; Fujimoto, Koichi; Ishihara, Sadao; Sugawara, Shinichi; and Igarashi, Isamu, 4,486,425, Cl. 424-246.000.
Santefort, Richard A.; and Neckel, Edmund, to Valco Cincinnati, Inc. Air actuated fluid control valve with fluid supported diaphragm. 4,486,001, Cl. 251-61.300.
Sanvito, Roberto: *See*—
Ronchi, Adelio; and Sanvito, Roberto, 4,485,751, Cl. 112-163.000.
Sarony, Peter P. Fire arm accessory with recoil absorbing secondary buffer arrangement. 4,485,723, Cl. 89-163.000.
Saruyama, Toshio: *See*—
Nakasuji, Katsuyoshi; and Saruyama, Toshio, 4,486,566, Cl. 524-788.000.
Sasaki, Masaomi, to Ricoh Company, Ltd. Bisazo compounds and electrophotographic photoconductors comprising the bisazo compounds. 4,486,519, Cl. 430-58.000.
Sasaki, Takashi: *See*—
Hosoi, Fumio; Sasaki, Takashi; Hagiwara, Miyuki; Egusa, Shigenori; and Nanishi, Kiyoshi, 4,486,280, Cl. 204-159.110.
Sasaki, Tomohico: *See*—
Takagi, Yasumasa; Sasaki, Tomohico; Matsumura, Tadanobu; and Gobuichi, Tadashi, 4,486,058, Cl. 339-14.00R.
Sass, Szilard: *See*—
Adonyi, Ivan; Farkas, Endre; Hegedus, Gyula; Korinendy, Attila; Mogyorosi, Istvanne ; Molnar, Geza; Sass, Szilard; Scholler, Laszlo ; Takacs, Lajos; and Vitez, Gyorgy, 4,486,825, Cl. 364-200.000.
Sassi, Kari, to Konejukka Oy. Friction joint for joining together machine elements. 4,486,116, Cl. 403-367.000.
Sato, Akihiko; Nakano, Yoshiyuki; and Tanaka, Etsuo, to Nippon Kogaku K.K. Light shield blades for light control device and light control device utilizing said light shield blades. 4,486,084, Cl. 354-246.000.
Sato, Mitsuru: *See*—
Ishigami, Sumiyuki; and Sato, Mitsuru, 4,486,681, Cl. 310-353.000.
Sato, Nobuhiro: *See*—
Fujiwara, Kazuo; Tomari, Haruo; Aritomi, Osamu; and Sato, Nobuhiro, 4,486,231, Cl. 75-125.000.
Sato, Shigeyuki: *See*—
Kurauchi, Toshio; Takahashi, Hidero; Sato, Shigeyuki; Murase, Makoto; Takahara, Minoru; Ohi, Tamio; and Kamio, Takaki, 4,486,373, Cl. 264-142.000.
Sato, Tadashi; and Tsunoi, Haruo, to Canon Kabushiki Kaisha. Original reading device. 4,486,786, Cl. 358-293.000.
Sato, Tadashi: *See*—
Chibata, Ichiro; Tosa, Tetsuya; Sato, Tadashi; and Yamamoto, Kozo, 4,486,532, Cl. 435-145.000.
Sato, Yasuhisa, to Canon Kabushiki Kaisha. Interchangeable lens permitting an automatic focus-adjusting device to be removably mounted thereto. 4,486,074, Cl. 350-255.000.
Sato, Yoshinari: *See*—
Umemura, Akihiro; Kunii, Hisayoshi; Shimizu, Michiyasu; and Sato, Yoshinari, 4,485,744, Cl. 108-51.100.
Sauer, Heinz, to Rasmussen GmbH. Sleeve coupling for hoses or the like. 4,486,034, Cl. 285-242.000.
Saur, Walter, to Robert Bosch GmbH. Apparatus for producing tubular-pouch packages. 4,485,613, Cl. 53-551.000.
Sauter, Robert: *See*—
Hurnaus, Rudolf; Griss, Gerhart; Sauter, Robert; Grell, Wolfgang; Kobinger, Walter; and Pichler, Ludwig, 4,486,433, Cl. 424-250.000.
Sauter, Walter A.: *See*—
Ghose, Rabindra N.; Sauter, Walter A.; and Foley, William L., 4,486,757, Cl. 343-417.000.
Savelkouls, Wilhelmus, to 3 S Beton B.V. Bottle rack. 4,485,930, Cl. 211-74.000.
Savoyet, Jean-Louis P. J.: *See*—
Mole, Alain M.; and Savoyet, Jean-Louis P. J., 4,486,751, Cl. 340-825.310.
Sawyer, David A.: *See*—
Baxter, Martin G.; Elphick, Albert R.; Miller, Alistair A.; and Sawyer, David A., 4,486,354, Cl. 260-465.00E.
Schade, Ekkehard: *See*—
Niemeyer, Lutz; Perrenoud, Blaise; Ragaller, Klaus; Schade, Ekkehard; and Schaumann, Rolf, 4,486,632, Cl. 200-148.00A.
Schaefer, Claude W., to Atco Rubber Products, Inc. Fabricating machine and process. 4,486,260, Cl. 156-429.000.
Schaetzel, Phillip R.: *See*—
Ball, James H.; Houts, Ronald C.; and Schaetzel, Phillip R., 4,486,620, Cl. 174-41.000.
Schafer, Gunter, to Security Lumber & Supply Co. Strip of flexible corrugated material. 4,486,484, Cl. 428-182.000.
Schafer, Robert H.; and Bosshard, Andreas, to UTI Corporation; and Huber & Subner Ltd. Joint between coaxial cable and microwave component. 4,486,726, Cl. 333-260.000.
Schafler, Norman I.: *See*—
Schafler, R. S.; and Schafler, Norman I., 4,486,369, Cl. 264-51.000.

Schafler, R. S.; and Schafler, Norman I., to Condec Corporation. Controlled environment extrusion apparatus and method. 4,486,369, Cl. 264-51.000.

Schamberg, Eckehard: *See*—
Fritsch, Herwig; Koerner, Gotz; Quilitsch, Herbert; and Schamberg, Eckehard, 4,486,476, Cl. 427-387.000.

Scharfenbergkupplung GmbH: *See*—
Forster, Hilmar; Vahldiek, Ernst; and Arbab, Dildar, 4,485,931, Cl. 213-4.000.

Schatz, Manfred: *See*—
Rau, Peter; and Schatz, Manfred, 4,486,384, Cl. 376-353.000.

Schaumann, Rolf: *See*—
Niemeyer, Lutz; Perrenoud, Blaise; Ragaller, Klaus; Schade, Ekkehard; and Schaumann, Rolf, 4,486,632, Cl. 200-148.00A.

Schaumann, Wolfgang: *See*—
Friebe, Walter-Gunar; Kampe, Wolfgang; Roesch nee Apostolides, Androniki; and Schaumann, Wolfgang, 4,486,442, Cl. 424-267.000.

Scheda, Francis A.: *See*—
Fromson, Robert E.; Skutch, Maria E.; Nunamaker, Charles S.; and Scheda, Francis A., 4,486,279, Cl. 204-129.500.

Scheinbeim, Jerry I.: *See*—
Newman, Brian A.; Pae, Kook D.; and Scheinbeim, Jerry I., 4,486,683, Cl. 310-800.000.

Schenk, Robert: *See*—
Marijnissen, Gerard J.; and Schenk, Robert, 4,486,204, Cl. 55-267.000.

Schenone, Carl E.; and Rosinski, Joseph, to United States of America, Energy. Fluidized bed gasification ash reduction and removal process. 4,486,199, Cl. 48-197.00R.

Scheurecker, Werner: *See*—
Wiesinger, Horst; Holleis, Gunter; Scheurecker, Werner; and Antonitsch, Walter, 4,485,837, Cl. 164-448.000.

Schijf, Robert; Trommelen, August M.; and Lansbergen, Gabriel J. T., to Lever Brothers Company. Margarine fat blend, and a process for producing said fat blend. 4,486,457, Cl. 426-603.000.

Schilling, Walter: *See*—
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,486,596, Cl. 549-239.000.

Schindler, H. Heinrich: *See*—
Koch, Ulrich; Plotz, Peter; Konig, Dieter; Langer, Jochen; Switalski, Burkhardt; Schindler, H. Heinrich; and Wesselski, Willi, 4,486,123, Cl. 405-169.000.

Schindler, Johannes G.; and Schindler nee Kardosova, Maria, to Fresenius AG. Measuring apparatus for the determination of oxygen partial pressure in fluids and gases. 4,486,291, Cl. 204-415.000.

Schindler nee Kardosova, Maria: *See*—
Schindler, Johannes G.; and Schindler nee Kardosova, Maria, 4,486,291, Cl. 204-415.000.

Schlick, Erich: *See*—
Bock, Georg; Schlick, Erich; and Schnall, Gunther, 4,486,012, Cl. 271-3.000.

Schlisio, Siegfried; and Schluter, Karl-Heinz, to Hauni-Werke Korber & Co. KG. Apparatus for severing running webs of tipping paper or the like. 4,485,710, Cl. 83-346.000.

Schlueter, Klaus: *See*—
Thiele, Heino; Weber, Werner; Zettler, Hans D.; Schlueter, Klaus; Wallner, Josef; and Seid, Bernhard, 4,486,102, Cl. 366-182.000.

Schlumberger Technology Corporation: *See*—
Lacour-Gayet, Philippe J., 4,486,836, Cl. 364-422.000.
Walulik, James J., 4,485,870, Cl. 166-250.000.

Schluter, Karl-Heinz: *See*—
Schlisio, Siegfried; and Schluter, Karl-Heinz, 4,485,710, Cl. 83-346.000.

Schmid, Herman: *See*—
Furmanski, Walery; and Schmid, Herman, 4,485,718, Cl. 89-1.140.

Schmidhuber, Erich: *See*—
Dathe, Joachim; and Schmidhuber, Erich, 4,486,622, Cl. 174-52.00H.

Schmidt, Douglass N.; Finnan, Jeffrey L.; and Lisa, Rudolph E., to BASF Wyandotte Corporation. Spray-dried vitamin powders using hydrophobic silica. 4,486,435, Cl. 424-252.000.

Schmidt, Jimmy Q., to United States of America, Army. Radio frequency coupled differential sensor coil for improved muzzle velocity measurements. 4,486,710, Cl. 324-179.000.

Schmiedel, Hans-Peter C., to Mobil Oil Corporation. Regeneration of polythionate poisoned ion exchange resins used in uranium recovery. 4,486,390, Cl. 423-7.000.

Schmitt, Gunther; Oppl, Gunther; Patel, Kirit; and Bieber, Theo, to Fag Kugelfischer Georg Schafer & Co. False-twist apparatus. 4,485,617, Cl. 57-340.000.

Schmitt, Josef, to Krupp MaK Maschinenbau GmbH. Device for determining the timely delivery of compressed gas from compressed-gas containers. 4,485,669, Cl. 73-167.000.

Schmitt, Klaus: *See*—
Schoen, Klaus-Peter; and Schmitt, Klaus, 4,486,094, Cl. 355-76.000.

Schmitz, Eckehard, to Pierburg GmbH & Co. KG. Method and arrangement for regulting a path length in dependence upon a variable control value. 4,486,688, Cl. 315-83.000.

Schmukler, Seymour: *See*—
Machonis, John, Jr.; Schmukler, Seymour; Zeitlin, Robert J.; and Shida, Mitsuzo, 4,486,469, Cl. 427-195.000.

Schnall, Gunther: *See*—
Bock, Georg; Schlick, Erich; and Schnall, Gunther, 4,486,012, Cl. 271-3.000.

Schnell, John W., to Shopsmith, Inc. Adjustable straddle block. 4,485,711, Cl. 83-425.000.

Schoen, Klaus-Peter; and Schmitt, Klaus, to Hoechst Aktiengesellschaft. Original holder for a printing plate processing apparatus. 4,486,094, Cl. 355-76.000.

Schofield, John, to U.S. Philips Corporation. Acoustic surface wave device. 4,486,724, Cl. 333-194.000.

Scholl, Charles H.: *See*—
Frates, Paul S.; Jameson, Calvin R.; Petrecca, Peter J.; and Scholl, Charles H., 4,485,941, Cl. 222-146.500.

Scholler, Laszlo : *See*—
Adonyi, Ivan; Farkas, Endre; Hegedus, Gyula; Kormendy, Attila; Mogyorosi, Istvanne ; Molnar, Geza; Sass, Szilard; Scholler, Laszlo ; Takacs, Lajos; and Vitez, Gyorgy, 4,486,825, Cl. 364-200.000.

Schott Glaswerke: *See*—
Gliemeroth, George; and Eichhorn, Uwe, 4,486,541, Cl. 501-13.000.

Schreurs, Jan J.: *See*—
Eoer, Gunes M.; Wood, Susan; and Schreurs, Jan J., 4,486,247, Cl. 148-31.500.

Schroer, Charles E.: *See*—
Maloney, Kevin; and Schroer, Charles E., 4,485,892, Cl. 182-161.000.

Schrotz, Kurt; and Koch, Ulf, to Esselte Pendaflex Corporation. Labeling device. 4,486,258, Cl. 156-384.000.

Schulein, Rolf-Gunter: *See*—
Hagedorn, Leonhard; and Schulein, Rolf-Gunter, 4,485,515, Cl. 15-184.000.

Schulte, Willi, to Friedrichsfeld GmbH Steinzeug-und Kunststoffwerke. Tooth implant made of metal. 4,486,178, Cl. 433-173.000.

Schulz, Gerd; and Hartleif, Hans-Peter. Device for front end locking of containers. 4,486,132, Cl. 410-81.000.

Schumacher, Rudolf, to Feldmuhle Aktiengesellschaft. Transparent, shrinkable film, consisting of one or several layers. 4,486,507, Cl. 428-476.100.

Schumann, Klaus: *See*—
Koppelmann, Edgar; Krapp, Gerd; Schumann, Klaus; and Smolka, Heinz G., 4,486,314, Cl. 210-714.000.

Schurter AG: *See*—
Wallner, Peter; and Lindenmann, Alois, 4,486,067, Cl. 339-218.00R.

Schwaikert, Ralph A., to RASCO Incorporated. Stackable container. 4,485,923, Cl. 206-508.000.

Schwan-Stabilo Schwanhausser GmbH & Co.: *See*—
Kruckei, Peter; and Winkler, Wolfgang, 4,486,110, Cl. 401-96.000.

Schwartz, Harvey R.; and Grossman, Samuel I. Animal feeder. 4,485,765, Cl. 119-51.130.

Schwartz, Jozsef; Hornyak nee Hamori, Marya; Sagi, Janos; Marmarosi nee Kellner, Katalin; Radvanyi nee Hegedus, Erzsebet; Szigeti, Zoltan; Caeh, Edit; and Bujtas nee Tolgyes, Klara, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Herbicide composition and process for the preparation of the active ingredients herbicidal phenyl carbonates. 4,486,222, Cl. 71-100.000.

Schwarze, Wilhelm W.: *See*—
Stroezel, Reinhold; Schwarze, Wilhelm W.; Roll, Karl; Hettich, Alfred; and Raidt, Wolfgang, 4,485,682, Cl. 73-862.360.

Schwarzmann, Matthias: *See*—
Hoelderich, Wolfgang; Mross, Wolf D.; and Schwarzmann, Matthias, 4,486,617, Cl. 585-640.000.

Schweiger, Fritz; and Wohler, Jurgen, to Hochtemperatur-Kernkraftwerk Gesellschaft mit beschrankter Haftung (HKG) Gemeinsame Europaisches Unternehmen. Method of shutting down a high-temperature reactor. 4,486,380, Cl. 376-210.000.

Schwinghammer, Michelle A.: *See*—
Cahalan, Patrick T.; and Schwinghammer, Michelle A., 4,486,290, Cl. 204-414.000.

Sciaky Bros., Inc.: *See*—
Sciaky, Peter D., 4,486,240, Cl. 148-4.000.

Sciaky, Peter D., to Sciaky Bros., Inc. Method and apparatus for heat treating. 4,486,240, Cl. 148-4.000.

Science Research Center, Inc.: *See*—
Brewer, John H.; and Foster, Terry L., 4,486,540, Cl. 436-513.000.

Scott, Eric J. Y.: *See*—
Bowes, Emmerson; Brandes, Susan D.; Farcasiu, Malvina; and Scott, Eric J. Y., 4,486,298, Cl. 208-253.000.

Scott, Hubert D.; and Campsey, Ronald L., to Texaco Inc. Water flow well logging sonde and method of water flow sensing. 4,486,658, Cl. 250-268.000.

Sea-Land Industries, Inc.: *See*—
Van Iperen, Willem H. P., 4,485,956, Cl. 227-147.000.

Sebba, Felix. Preparation of biliquid foam compositions. 4,486,333, Cl. 252-307.000.

Security Lumber & Supply Co.: *See*—
Schafer, Gunter, 4,486,484, Cl. 428-182.000.

Seeley, Douglas: *See*—
Jeffers, William; Seeley, Douglas; Faust, Raimund J.; and Liu, Shuchen, 4,486,529, Cl. 430-300.000.

Segol, Avrahaum. Garment. 4,485,494, Cl. 2-115.000.

Seid, Bernhard: *See*—
Thiele, Heino; Weber, Werner; Zettler, Hans D.; Schlueter, Klaus; Wallner, Josef; and Seid, Bernhard, 4,486,102, Cl. 366-182.000.

Seidel, Harold, to AT&T Bell Laboratories. DC Cancellation in ternary-coded data systems. 4,486,740, Cl. 340-347.0DD.

Seifert, Raymond C.; and Miller, Frank J., Jr., to General Motors Corporation. Core crimp ignition terminal. 4,486,063, Cl. 339-97.00C.

Seijo, Hideji: *See*—
Matsumoto, Kunio; Izumi, Rokuro; Seijo, Hideji; and Mizuguchi, Hiroyuki, 4,486,549, Cl. 521-53.000.

Seimaya, Ryubun: *See*—
Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; Funaki, Hiroto; Seimaya, Ryubun; Yamada, Yutaka; Tomono, Makoto; and Tarumi, Noriyoshi, 4,486,524, Cl. 430-109.000.

Seki, Fumio, to Yoshida Kogyo K.K. Fastener applying apparatus. 4,485,541, Cl. 29-251.000.

Seki, Masayuki: *See*—
Kawaguchi, Takeshi; and Seki, Masayuki, 4,485,897, Cl. 188-73.390.

Senco Products, Inc.: *See*—
Rothfuss, Robert G., 4,485,953, Cl. 227-19.000.

Senju Pharmaceutical Co., Ltd.: *See*—
Kawamatsu, Yutaka; Fujita, Takeshi; and Yamamoto, Yujiro, 4,486,594, Cl. 548-183.000.

Seno, Eugene T.: *See*—
Baltz, Richard H.; Wild, Gene M.; and Seno, Eugene T., 4,486,584, Cl. 536-7.100.

Sensormatic Electronics Corporation: *See*—
Westcott, Vernon C., 4,486,731, Cl. 336-212.000.

Ser, Jean-Claude; N'Guyen, Quang L.; Millet, Catherine; and Szarazi, Bela, to Societe Anonyme dite: L'Oreal. Copper lanolate and anti-acne compositions containing the same for topical application to the skin. 4,486,448, Cl. 424-294.000.

Sevink, Theodor J. Furnace, especially a ceramic or heating furnace. 4,486,888, Cl. 373-130.000.

Seward, Thomas P., III: *See*—
Lentz, William P.; Seward, Thomas P., III; and Shay, George C., 4,486,213, Cl. 65-30.110.

Seybold, Guenther; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Thiazolo[2,3-b]quinazolones and their use for influencing plant growth. 4,486,221, Cl. 71-90.000.

Seybold, Guenther, to BASF Aktiengesellschaft. Concentration of light over a particular area and novel fluorescent compounds. 4,486,587, Cl. 544-99.000.

Shackelford, Wendell; and Watkins, Dwight G., to Childcraft Education Corporation. Multiple-post toy stacker assembly. 4,485,585, Cl. 446-117.000.

Shah, Dilip; Borkan, Lionel; and Berry, Ira R., to Pharmacaps, Inc. Encapsulated antacid dispersions. 4,486,412, Cl. 424-156.000.

Shankhla, Vikram S.; and Langlois, Raymond, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government. Rifled fiber reinforced gun barrel. 4,485,721, Cl. 89-15.000.

Shanks, Ralph, Jr. Article of apparel. 4,485,496, Cl. 2-247.000.

Shannon, John M., to U.S. Philips Corporation. Schottky barrier field effect transistors. 4,486,766, Cl. 357-15.000.

Shannon, Suel G.: *See*—
Long, William B.; Shannon, Suel G.; Shuey, John R.; and Stahl, Daniel E., 4,486,064, Cl. 339-99.00R.

Sharp, Harper E.; Linn, John W., III; Macha, Emil S.; and Smither, Miles A., to Wilson Industries, Inc. Borehole survey instrument. 4,485,563, Cl. 33-314.000.

Sharp Kabushiki Kaisha: *See*—
Funada, Fumiaki; Matsuura, Masataka; and Wada, Tomio, 4,486,760, Cl. 346-107.00R.
Nonomura, Keisaku; Matsuura, Masataka; Uede, Hisashi; Kishi, Kohhei; and Kato, Hiroaki, 4,486,748, Cl. 340-756.000.

Sharp, William M.: *See*—
Kaufman, Charles E.; Shetler, Marvin R.; and Sharp, William M., 4,485,608, Cl. 52-745.000.

Sharpe, T. E.: *See*—
Sharpe, Timothy E., 4,485,804, Cl. 126-426.000.

Sharpe, Timothy E., to Sharpe, T. E. Solar heat collector system. 4,485,804, Cl. 126-426.000.

Shaw, Jane; and Gale, Robert M., to ALZA Corporation. Method for treating ischemic conditions by administering drug by two routes. 4,486,193, Cl. 604-897.000.

Shay, George C.: *See*—
Lentz, William P.; Seward, Thomas P., III; and Shay, George C., 4,486,213, Cl. 65-30.110.

Shearer, Daniel, III: *See*—
McCallister, Ronald D.; and Shearer, Daniel, III, 4,486,846, Cl. 364-607.000.

Shell Oil Company: *See*—
Estreicher, Herbert; and Soloway, Samuel B., 4,486,427, Cl. 424-246.000.
Kamp, Anthony W.; and Feenstra, Robijn, 4,485,879, Cl. 175-61.000.
Ongkiehong, Leo; and Huizer, Willem, 4,486,864, Cl. 367-23.000.
Payne, George B., 4,486,220, Cl. 71-88.000.
Powell, James E., 4,486,219, Cl. 71-88.000.

Shelnut, James: *See*—
Kesselman, Jerome; Shelnut, James; and Wilkes, Alan, 4,486,518, Cl. 430-5.000.

Shepard, Kenneth L., to Merck & Co., Inc. (Hydroxybenzoyl)thiophenesulfonamide and acyl derivatives thereof for the topical treatment of elevated intraocular pressure. 4,486,444, Cl. 424-275.000.

Shetler, Marvin R.: *See*—
Kaufman, Charles E.; Shetler, Marvin R.; and Sharp, William M., 4,485,608, Cl. 52-745.000.

Shibata, Katuo: *See*—
Kobayashi, Nobuyuki; Abe, Yoritsune; Shibata, Katuo; and Watanabe, Yukio, 4,486,482, Cl. 428-69.000.

Shida, Mitsuzo: *See*—
Machonis, John, Jr.; Schmukler, Seymour; Zeitlin, Robert J.; and Shida, Mitsuzo, 4,486,469, Cl. 427-195.000.

Shigen-Kyokai: *See*—
Arai, Taiji; and Kako, Saburo, 4,486,217, Cl. 71-25.000.

Shigyo, Seiji: *See*—
Sugimoto, Tatsuo; Shigyo, Seiji; Takashima, Kazutoshi; and Komaba, Yuichi, 4,485,957, Cl. 228-4.500.

Shikunami, Juichi: *See*—
Wada, Yoshiyo; Kinjo, Hisao; Ueno, Ichiro; Honjo, Yoshihiko; Tatsuguchi, Kazuo; and Shikunami, Juichi, 4,486,791, Cl. 358-342.000.

Shima, Masatoshi; Faggin, Federico; and Ungermann, Ralph K., to Zilog, Inc. Microprocessor apparatus. 4,486,827, Cl. 364-200.000.

Shimada, Masaru: *See*—
Kurisu, Norio; Matsuda, Tsutomu; Shimada, Masaru; and Kubo, Keishi, 4,486,527, Cl. 430-158.000.

Shimahara, Minoru: *See*—
Kenjo, Susumu; Shimahara, Minoru; and Gokyu, Toshio, 4,486,506, Cl. 428-475.200.

Shimazaki, Hiroshi: *See*—
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, 4,486,376, Cl. 264-342.00R.

Shimiya, Keiji: *See*—
Maeoka, Hidehiko; Shimizu, Etsuo; Suzuki, Yujiro; Shimiya, Keiji; and Miura, Norio, 4,486,486, Cl. 428-212.000.

Shimizu, Etsuo: *See*—
Maeoka, Hidehiko; Shimizu, Etsuo; Suzuki, Yujiro; Shimiya, Keiji; and Miura, Norio, 4,486,486, Cl. 428-212.000.

Shimizu, Koji: *See*—
Matsushita, Takao; and Shimizu, Koji, 4,486,495, Cl. 428-266.000.

Shimizu, Michiyasu: *See*—
Umemura, Akihiro; Kunii, Hisayoshi; Shimizu, Michiyasu; and Sato, Yoshinari, 4,485,744, Cl. 108-51.100.

Shimomura, Kenji, to Ikeda Bussan Co., Ltd. Process for producing polyurethane-foam moldings, and apparatus for same. 4,486,367, Cl. 264-39.000.

Shinada, Shinichi: *See*—
Okamoto, Yukio; Shinada, Shinichi; Okabe, Tadao; Ikarashi, Kazuhito; and Igarashi, Osamu, 4,486,747, Cl. 340-753.000.

Shinagawa Refractories, Co., Ltd.: *See*—
Sugimoto, Hiroyuki; Fukaya, Kazuo; and Koguchi, Yoji, 4,486,545, Cl. 501-123.000.

Shindow, Osamu: *See*—
Itoh, Kiyoshi; Nishikawa, Yukiyasu; Hoshika, Shuji; Hara, Masato; Ishiai, Hideyuki; Okamoto, Ikuzo; and Shindow, Osamu, 4,486,080, Cl. 351-206.000.

Shinko Electric Co., Ltd.: *See*—
Ohba, Toshitsugu; and Murata, Masanao, 4,486,694, Cl. 318-587.000.

Shinko Machinery Co., Ltd.: *See*—
Takumi, Hiroshi, 4,485,851, Cl. 140-103.000.

Shinogaya, Tatsuji: *See*—
Shinohara, Takanobu; Anzai, Toshio; and Shinogaya, Tatsuji, 4,486,472, Cl. 427-239.000.

Shinohara, Takanobu; Anzai, Toshio; and Shinogaya, Tatsuji, to Toyo Engineering Corp.; and Nippon Zeon Co., Ltd. Method of preventing a combustion furnace from corrosion. 4,486,472, Cl. 427-239.000.

Shiotsubo, Masami: *See*—
Yamamuro, Toshikazu; Shiotsubo, Masami; and Saito, Hiroshi, 4,486,124, Cl. 405-184.000.

Shiozaki, Tomoharu: *See*—
Okamoto, Shigeo; and Shiozaki, Tomoharu, 4,486,762, Cl. 346-207.000.

Shirai, Shigeru: *See*—
Misumi, Teruo; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Shirai, Shigeru, 4,486,521, Cl. 430-65.000.

Shiratsuchi, Kouji: *See*—
Fukunaga, Hirofumi; and Shiratsuchi, Kouji, 4,485,884, Cl. 180-219.000.

Shizuri, Akihiko, to Mitutoyo Mfg. Co., Ltd. Clamp device for height gauge. 4,485,557, Cl. 33-169.00R.

Shoemaker, Norris E.: *See*—
Pilie, Roland J.; Shoemaker, Norris E.; and Akers, Charles K., 4,485,489, Cl. 2-2.000.

Shoji, Hisataka; and Ouchi, Shigehiro, to Toray Industries, Inc. Methods for manufacturing lead fiber and radiation shielding material using the same. 4,485,838, Cl. 164-462.000.

Shoji, Morio; and Yamamoto, Akiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Method of controlling rolling apparatus. 4,485,652, Cl. 72-19.000.

Shollenbarger, David W., to Fisher Controls International, Inc. Pressure pilot switch point device. 4,485,727, Cl. 92-13.200.

Shopsmith, Inc.: *See*—
Krogstad, James D.; and Wulff, Thomas J., 4,485,859, Cl. 144-252.00R.
Schnell, John W., 4,485,711, Cl. 83-425.000.

Shotbolt, Keith. Pipe connectors. 4,486,037, Cl. 285-261.000.

Shoup, Thomas E., to TRW Inc. Method for conducting smut-free welding. 4,486,644, Cl. 219-99.000.

Shuey, John R.: *See*—
Long, William B.; Shannon, Suel G.; Shuey, John R.; and Stahl, Daniel E., 4,486,064, Cl. 339-99.00R.

Shultz, Rosemarie: *See*—
Prietzel, Gunter; and Shultz, Rosemarie, 4,486,636, Cl. 200-255.000.

Shutov, Gennady M.; Erdman, Maya E.; Boltovsky, Valery S.; Solomakha, Adel I.; Nosevich, Alexandr F.; Pukhalsky, Miroslav E.; Kirichenko, Vladimir A.; and Derbyshkin, Valentin V., to Belorussky Tekhnologichesky Institut. Method of modifying wood. 4,486,475, Cl. 427-351.000.

Shvedova, Anna A.: *See*—
Emanuel, Nikolai M.; Shvedova, Anna A.; Smirnov, Leonid D.; Spirina, Larisa V.; and Katsnelson, Lev A., 4,486,440, Cl. 424-263.000.

Siebold, Horst: *See*—
Frese, Georg; and Siebold, Horst, 4,486,711, Cl. 324-319.000.

Siegel, Carole E.: *See*—
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,486,436, Cl. 424-253.000.

Siemens Aktiengesellschaft: *See*—
Blumner, Christoph, 4,486,698, Cl. 318-721.000.
Dathe, Joachim; and Schmidhuber, Erich, 4,486,622, Cl. 174-52.00H.
Feuerbaum, Hans-Peter, 4,486,660, Cl. 250-310.000.
Franksen, Holger, 4,486,800, Cl. 361-19.000.
Frese, Georg; and Siebold, Horst, 4,486,711, Cl. 324-319.000.
Kuelzer, Peter, 4,485,950, Cl. 226-74.000.
Ott, Gunter, 4,486,737, Cl. 338-22.00R.
Prietzel, Gunter; and Shultz, Rosemarie, 4,486,636, Cl. 200-255.000.
Risch, Lothar; Feigt, Ingmar; and Tielert, Reinhard, 4,486,778, Cl. 358-111.000.
Rohloff, Rolf, 4,486,055, Cl. 384-535.000.

Siemens Gammasonics, Inc.: *See*—
Arseneau, Roger E., 4,486,663, Cl. 250-363.00S.

Sievers, Paul T. Combination golf putter and retriever. 4,486,019, Cl. 273-162.00E.

Sigl, Wayne C., to Kimberly-Clark Corporation. Conformable garments with discrete elasticized areas. 4,486,192, Cl. 604-385.000.

Silla, Vincente A., to Solis S.r.l. Process and apparatus for automatically transferring hosiery garments such as tights from a machine. 4,485,753, Cl. 112-262.200.

Silverthorn, Charles R.; and Sancken, Ernest H., to A. O. Smith Harvestore Products Inc. Roller mill construction. 4,485,977, Cl. 241-230.000.

Simko, Richard T., to XICOR, Inc. Dense nonvolatile electrically-alterable memory device with substrate coupling electrode. 4,486,769, Cl. 357-41.000.

Simmons U.S.A. Corporation: *See*—
Stumpf, Walter; and Dillion, Paul J., 4,485,506, Cl. 5-477.000.

Simon, Imre: *See*—
Szego , Andras; Kovats, Ferenc; Peterdi, Viktoria; Bone , Istvan; Gombos, Laszlo ; Oz, Ferenc; and Simon, Imre, 4,486,595, Cl. 548-306.000.

Simon, Pierre: *See*—
Lambert, Nicole; Simon, Pierre; and Conti, Rene , 4,486,243, Cl. 148-12.00R.

Simonov, Vadim D.: *See*—
Gorbacheva, Irina N.; Sukhova, Ljudmila M.; Kozinda, Zinaida J.; Molokov, Vladislav L.; Antonov, Lev T.; Simonov, Vadim D.; Chertov, Viktor A.; Dvoskin, Semen I.; and Veseneva, Raisa S., 4,486,347, Cl. 534-797.000.

Simpson, Jay R.: *See*—
Lynch, Brian; MacChesney, John B.; Partus, Fred P.; and Simpson, Jay R., 4,486,214, Cl. 65-3.120.

Simpson, Willie T., to Barber-Colman Company. Holder for the core of a yarn package or the like. 4,485,987, Cl. 242-130.100.

Singer Company, The: *See*—
Duckworth, James J., 4,486,845, Cl. 364-559.000.
Marsh, Walter H. W.; and Adams, Kenneth D., 4,485,755, Cl. 112-292.000.

Sitkei, Ferenc: *See*—
Baksa, Gyorgy; Boros, Jozsef; Horvath, Gyula; Ihasz, Balazs; Pais, Zoltan; Rainiss, Matyas; Sitkei, Ferenc; Solymar, Karoly; Toth, Bela; Vallo, Ferenc; Voro s, Istvan; Orban nee Kelemen, Maria; and Zoldi, Jozsef, 4,486,393, Cl. 423-121.000.

Siwiec, Dean M.: *See*—
Rainer, Norman B.; and Siwiec, Dean M., 4,485,829, Cl. 131-291.000.

Siwy, Charles C. Hasp construction. 4,486,057, Cl. 312-216.000.

Skarp, Jarmo I., to Oy Lohja Ab; Rosedale Products, Inc.; Rosedale Products, Inc.; and Rosedale Products, Inc. Combination film, in particular for thin film electroluminescent structures. 4,486,487, Cl. 428-216.000.

SKF Kugellagerfabriken GmbH: *See*—
Brandenstein, Manfred; and Meyer, Wilhelm, 4,486,056, Cl. 384-477.000.

Skobelkin, Oleg K.: *See*—
Chernousov, Alexandr F.; Domrachev, Sergei A.; Ivanov, Alexei I.; Malyshev, Boris N.; Saljuk, Viktor A.; Skobelkin, Oleg K.; and Brekhov, Evgeny I., 4,485,811, Cl. 128-303.100.

Skutch, Maria E.: *See*—
Fromson, Robert E.; Skutch, Maria E.; Nunamaker, Charles S.; and Scheda, Francis A., 4,486,279, Cl. 204-129.500.

Skylvik, Arnold R., to Aktiebolaget Cerbo. Resealable package. 4,485,920, Cl. 206-468.000.

Sledesky, Stephen M., to Coleco Industries, Inc. Joystick controller. 4,486,629, Cl. 200-6.00A.

Slide Shooters, Inc.: *See*—
Fuller, Robert D., 4,485,611, Cl. 53-501.000.

Slingsby, Rosanne W.; and Pohl, Christopher A., to Dionex Corporation. Analysis of liquid streams using tubing with protuberances on its inner wall. 4,486,312, Cl. 210-656.000.

Sloan, Frederick R. W., to Lintrend Licensing Company Limited. Fibrous product containing viscose. 4,486,197, Cl. 8-493.000.

Sloboda, Adolph E.: *See*—
Tomcufcik, Andrew S.; and Sloboda, Adolph E., 4,486,430, Cl. 424-249.000.

Slomma, Heinz-Georg; and Ripkens, Hans-Gerd, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Adjustable needle bar crank drive. 4,485,752, Cl. 112-221.000.

Smedinghoff, John F.: *See*—
Puhl, Larry C.; and Smedinghoff, John F., 4,486,624, Cl. 179-2.0EB.

Smirnov, Leonid D.: *See*—
Emanuel, Nikolai M.; Shvedova, Anna A.; Smirnov, Leonid D.; Spirina, Larisa V.; and Katsnelson, Lev A., 4,486,440, Cl. 424-263.000.

Smith International, Inc.: *See*—
Vezirian, Edward; Ouinones, Richard J.; and Lockstedt, Alan W., 4,486,104, Cl. 384-95.000.

Smith, Jasper N., to Wells Lamont Corporation. Hand wearing apparel display package and method and machine for assembly thereof. 4,485,917, Cl. 206-278.000.

Smith, Karl R.: *See*—
Roush, Roy W.; Rassaian, Mostafa; and Smith, Karl R., 4,485,743, Cl. 105-176.000.

Smith Kline & French Laboratories Limited: *See*—
Sach, George S., 4,486,434, Cl. 424-251.000.

Smith, Richard H.: *See*—
Huber, Doyle W.; Smith, Richard H.; and Strong, Robert L., 4,485,709, Cl. 83-324.000.

Smith, Richard H., Sr., to Universal Spiralweld Enterprises, Inc. Helical seam structural vessel, method and apparatus of forming same. 4,485,756, Cl. 114-65.00R.

Smith, Roy E. R.: *See*—
Freeman, Albert L.; Taylor, Brian H.; and Smith, Roy E. R., 4,486,727, Cl. 335-106.000.

Smither, Miles A.: *See*—
Sharp, Harper E.; Linn, John W., III; Macha, Emil S.; and Smither, Miles A., 4,485,563, Cl. 33-314.000.

Smithkline Diagnostics, Inc.: *See*—
Baker, Joseffina T.; Lawrence, Paul J.; and Townsley, Charles W., 4,486,536, Cl. 436-66.000.

Smolka, Heinz G.: *See*—
Koppelmann, Edgar; Krapp, Gerd; Schumann, Klaus; and Smolka, Heinz G., 4,486,314, Cl. 210-714.000.

SMS Schloemann-Siemag AG: *See*—
Streubel, Hans; and Thorner, Hans-Otto, 4,485,836, Cl. 164-442.000.

SMS Schloemann-Siemag Aktiengesellschaft: *See*—
Kutz, Heinrich, 4,485,659, Cl. 72-302.000.

Snamprogetti, S.p.A.: *See*—
Fabbri, Cesare; Bellitto, Gianfranco; La Mantia, Giuseppe; and Failla, Biagio, 4,486,209, Cl. 62-18.000.

Sneider, Vincent R. Garment shield with removable outer portions. 4,485,492, Cl. 2-56.000.

Snider, Joel M.: *See*—
Mulder, James R.; Pielemeier, John W.; and Snider, Joel M., 4,485,645, Cl. 68-18.00F.

Snow, Richard H.: *See*—
Sresty, Guggilam C.; Dev, Harsh; Snow, Richard H.; and Bridges, Jack E., 4,485,868, Cl. 166-248.000.
Sresty, Guggilam C.; Snow, Richard H.; and Bridges, Jack E., 4,485,869, Cl. 166-248.000.

Snyder, Larry L., to Harrison Western Corporation. Rectangular tunnel boring machine and method. 4,486,050, Cl. 299-18.000.

Societa Nationale Industrielle et Aerospatiale: *See*—
Jonca, Henri V. J., 4,485,735, Cl. 101-93.210.

Societe Anonyme dite: L'Oreal: *See*—
Ser, Jean-Claude; N'Guyen, Quang L.; Millet, Catherine; and Szarazi, Bela, 4,486,448, Cl. 424-294.000.

Societe Chimique des Charbonnages: *See*—
Machon, Jean-Pierre; Le Brasseur, Genevieve; Decroix, Jean-Claude; and Hert, Marius, 4,486,579, Cl. 526-65.000.

Societe de Construction des Avions Hurel-Dubois: *See*—
Fournier, Alain M.; and Kennedy, John F., 4,485,970, Cl. 239-265.290.

Societe Industrielle de Decoration et Application S.I.D.A.: *See*—
Bennetot, Remy J. P., 4,485,574, Cl. 38-102.200.

Soclof, Sidney I., to Rockwell International Corporation. NPN Type lateral transistor separated from substrate by O.D.E. for minimal interference therefrom and method for producing same. 4,485,551, Cl. 29-576.00W.

Soderlund Hans E.: *See*—
Ranki, Tuula M.; and Soderlund Hans E., 4,486,539, Cl. 436-504.000.

Soelberg, Kenneth B.: *See*—
Yamaguchi, Akiya; Stark, Marvin M.; and Soelberg, Kenneth B., 4,485,823, Cl. 128-739.000.

Soeno, Ko: *See*—
Chigasaki, Mitsuo; Otaka, Kiyoshi; Okayama, Akira; Onisawa, Kenichi; and Soeno, Ko, 4,486,245, Cl. 148-13.100.

Solis S.r.l.: *See*—
Gazzarrini, Vinicio, 4,485,749, Cl. 112-121.120.
Silla, Vincente A., 4,485,753, Cl. 112-262.200.

Soll, David B.; and Harrison, Sol E. Protection of human and animal cells subject to exposure to trauma. 4,486,416, Cl. 424-180.000.
Sollish, Bruce D.: *See—*
Bai, Dov; Brandt, Achi E.; and Sollish, Bruce D., 4,486,835, Cl. 364-414.000.
Solomakha, Adel I.: *See—*
Shutov, Gennady M.; Erdman, Maya E.; Boltovsky, Valery S.; Solomakha, Adel I.; Nosevich, Alexandr F.; Pukhalsky, Miroslav E.; Kirichenko, Vladimir A.; and Derbyshkin, Valentin V., 4,486,475, Cl. 427-351.000.
Soloway, Samuel B.: *See—*
Estreicher, Herbert; and Soloway, Samuel B., 4,486,427, Cl. 424-246.000.
Solymar, Karoly: *See—*
Baksa, Gyorgy; Boros, Jozsef; Horvath, Gyula; Ihasz, Balazs; Pais, Zoltan; Raisits, Matyas; Sitkei, Ferenc; Solymar, Karoly; Toth, Bela; Vallo, Ferenc; Voro s, Istvan; Orban nee Kelemen, Maria; and Zoldi, Jozsef, 4,486,393, Cl. 423-121.000.
Somemiya, Akiyoshi: *See—*
Miyashita, Shunitsu; and Somemiya, Akiyoshi, 4,486,568, Cl. 525-63.000.
Sommerfeld, Eugene G.: *See—*
Coughlin, James E.; Sommerfeld, Eugene G.; and Strolle, Clifford H., 4,486,508, Cl. 428-480.000.
Somogyi, Gabor: *See—*
Brendel nee Hajnoczki, Marta; Gulyas, Imre; Gyoker, Istvan; Zsupan, Kalman; Csorvassy, Istvan; Salamon, Zoltan; Somogyi, Gabor; Szentkiralyi, Istvan; Timar, Tibor; Biro nee Czapary, Eva; Fodor, Istvan; and Repasi, Janos, 4,486,359, Cl. 260-502.50F.
Sonerud, John T. Apparatus for mounting a drilling machine on an excavator bucket. 4,485,570, Cl. 37-117.500.
Sonoda, Masakazu; Terashima, Takashi; and Ozawa, Minoru, to Sony Corporation. DC Motor control circuit for drop-out of stopping pulses in recorder. 4,486,692, Cl. 318-258.000.
Sony Corporation: *See—*
Hirano, Masahiro, 4,486,720, Cl. 330-298.000.
Ive, John G. S., 4,486,780, Cl. 358-160.000.
Kawamoto, Hideo; and Uehara, Seigo, 4,486,799, Cl. 360-130.230.
Nagai, Kunio, 4,486,897, Cl. 381-2.000.
Nishimura, Toshimichi; and Noguchi, Takashi, 4,486,672, Cl. 307-268.000.
Sakamoto, Hitoshi, 4,486,796, Cl. 360-77.000.
Sonoda, Masakazu; Terashima, Takashi; and Ozawa, Minoru, 4,486,692, Cl. 318-258.000.
Yokoya, Satoshi, 4,486,898, Cl. 381-15.000.
Sookne, Arnold M., to Burlington Industries, Inc. Nonwoven textile structures with reversible stretch. 4,486,485, Cl. 428-198.000.
Sorkin, Jack L.: *See—*
Thomas, Daniel C.; and Sorkin, Jack L., 4,486,526, Cl. 430-156.000.
Soule, Eugene A.; Taylor, William L.; and Walker, Robert H., to Knickerbocker Company, The. Lift truck mast and carriage assembly. 4,485,894, Cl. 187-9.00E.
Spaeth, Hans: *See—*
Blanc, Guy-Francois; and Spaeth, Hans, 4,486,695, Cl. 318-663.000.
Spangler, Haroid L.: *See—*
Jeffery, Philip A.; Reed, L. J.; and Spangler, Harold L., 4,486,880, Cl. 370-112.000.
Speller, David J., to Baker Oil Tools, Inc. Valving apparatus for downhole tools. 4,485,876, Cl. 166-373.000.
Spencer, William: *See—*
Jackovich, Melvin C.; Spencer, William; and Thom, James B., 4,486,801, Cl. 361-21.000.
Sperry Corporation: *See—*
de Jong, J. N. M.; and Earle, R. L., 4,486,812, Cl. 361-283.000.
Kaminski, David G., 4,486,848, Cl. 364-715.000.
Young, Peter L., 4,486,464, Cl. 427-63.000.
Spica S.p.A.: *See—*
Roca-Nierga, Manuel, 4,486,155, Cl. 417-500.000.
Spire Corporation: *See—*
Little, Roger G., 4,486,265, Cl. 156-606.000.
Spirina, Larisa V.: *See—*
Emanuel, Nikolai M.; Shvedova, Anna A.; Smirnov, Leonid D.; Spirina, Larisa V.; and Katsnelson, Lev A., 4,486,440, Cl. 424-263.000.
Spivey, David H.: *See—*
Carrell, Edward A.; and Spivey, David H., 4,485,864, Cl. 165-11.00R.
Spongh, Rolf T.; and Noss, Jeffrey S., to Nordson Corporation. Transitional command position modification for a controller. 4,486,843, Cl. 364-513.000.
Sprague, David L.: *See—*
Christopher, Lauren A.; and Sprague, David L., 4,486,851, Cl. 364-770.000.
Sprague Electric Company: *See—*
Maher, John P., 4,486,813, Cl. 361-321.000.
Spurk, Joseph H. Internal combustion piston engine including a cylinder having a main combustion chamber and at least one secondary combustion chamber. 4,485,779, Cl. 123-289.000.
Spurny, Jiri: *See—*
Heckmann, Klaus; and Spurny, Jiri, 4,486,392, Cl. 423-11.000.
Square D Company: *See—*
Zylstra, Henry J., 4,486,803, Cl. 361-95.000.
Sresty, Guggilam C.; Dev, Harsh; Snow, Richard H.; and Bridges, Jack E., to IIT Research Institute. Method for recovery of viscous hydrocarbons by electromagnetic heating in situ. 4,485,868, Cl. 166-248.000.
Sresty, Guggilam C.; Snow, Richard H.; and Bridges, Jack E., to IIT Research Institute. Recovery of liquid hydrocarbons from oil shale by electromagnetic heating in situ. 4,485,869, Cl. 166-248.000.
SRI International: *See—*
Taenzer, Jon C., 4,486,076, Cl. 350-132.000.
Srogi, Ladislaw G. Drive system for an electric generator. 4,486,667, Cl. 290-1.00R.
Staashelm, Henry E. Article storage rack. 4,485,928, Cl. 211-35.000.
Stachowiak, Weis A., to Fisheries Resource Development Limited. Filleting board. 4,485,527, Cl. 17-70.000.
Stadtmuller, Gunter: *See—*
Diehl, Manifred; Bergmann, Roland; and Stadtmuller, Gunter, 4,486,331, Cl. 252-174.250.
Stadtwerke Dusseldorf AG: *See—*
Marnet, Chrysanth; and Kassebohm, Borchert, 4,486,388, Cl. 422-178.000.
Stahl, Daniel E.: *See—*
Long, William B.; Shannon, Suel G.; Shuey, John R.; and Stahl, Daniel E., 4,486,064, Cl. 339-99.00R.
Standard Oil Company, The: *See—*
Eshraghi, Reza; Pesa, Frederick A.; and Desmond, Mike J., 4,486,397, Cl. 423-306.000.
Standard Structures, Inc.: *See—*
Avilla, Kenneth J., 4,485,860, Cl. 144-350.000.
Stanley Electric Co., Ltd.: *See—*
Hashimoto, Kenshiro; Okazaki, Kunio; Tanabe, Toru; and Koguro, Toshio, 4,486,818, Cl. 362-65.000.
Takahashi, Kaoru, 4,486,364, Cl. 264-1.700.
Stansbury, Jeffrey W.: *See—*
Brauer, Gerhard M.; and Stansbury, Jeffrey W., 4,486,179, Cl. 433-199.000.
Stapp, Paul R., to Phillips Petroleum Company. Sulfone cosurfactants in enhanced oil recovery processes. 4,485,872, Cl. 166-273.000.
Stark, Marvin M.: *See—*
Yamaguchi, Akiya; Stark, Marvin M.; and Soelberg, Kenneth B., 4,485,823, Cl. 128-739.000.
Staroselsky, Naum. Method of automatic limitation for a controlled variable in a multivariable system. 4,486,142, Cl. 415-1.000.
Stavropoulos, Constantine N., to Engineering Resources, Inc. Condensate removal device for steam lines and the like. 4,486,208, Cl. 55-466.000.
Steelcase Inc.: *See—*
Beukema, Duane M.; and Knoblauch, Jack R., 4,485,996, Cl. 248-407.000.
Steinbeck, Herbert: *See—*
Hofbauer, August; Steinbeck, Herbert; and Weiner, Hans, 4,485,788, Cl. 123-452.000.
Steingass, Robert W.: *See—*
McMillan, Stewart G.; Steingass, Robert W.; and McMillan, Clyde H., 4,485,877, Cl. 169-48.000.
Stelzenmuller, William K.: *See—*
Lasher, Dana A.; and Stelzenmuller, William K., 4,486,785, Cl. 358-284.000.
Stelzer, Paul H., to Dow Chemical Company, The. Process for softening an absorbent laminate. 4,486,374, Cl. 264-156.000.
Sterling Drug Inc.: *See—*
Lesher, George Y.; and Dickinson, William B., 4,486,431, Cl. 424-250.000.
Stern, David M., to Drexelbrook Engineering Company. Two-wire level measuring instrument. 4,485,673, Cl. 73-304.00C.
Sterner Lighting Systems Incorporated: *See—*
Guggemos, Kenneth F., 4,486,754, Cl. 340-949.000.
Stevens, Leonard W.: *See—*
Koenig, Robert J.; and Stevens, Leonard W., 4,485,620, Cl. 60-39.750.
Stevenson, David T.: *See—*
Troup, Robert L.; and Stevenson, David T., 4,486,229, Cl. 75-68.00R.
Stevenson, Robert L. Stove construction. 4,485,800, Cl. 126-77.000.
Stewart, A. K.; and Hewitt, John H. Carriage assembly for a tube bending machine. 4,485,658, Cl. 72-149.000.
Stewart, Donald G., to Brent Chemicals International. Apparatus for treating work pieces. 4,485,761, Cl. 118-702.000.
Stoffel, Hans F., to Stoffel Technologies, Inc. Easy-open structure for containers and method of forming the same. 4,485,935, Cl. 220-270.000.
Stoffel Technologies, Inc.: *See—*
Stoffel, Hans F., 4,485,935, Cl. 220-270.000.
Stoll, Martin: *See—*
Kliemann, Bruno; and Stoll, Martin, 4,486,365, Cl. 264-24.000.
Stopper, Herbert, to Burroughs Corporation. Method of testing networks on a wafer having grounding points on its periphery. 4,486,705, Cl. 324-73.00R.
Storke, Francis J. Reusable coupling. 4,486,035, Cl. 285-253.000.
Storke, Francis J.; Grayson, Carl L.; and Loker, Ernest B. Reusable coupling. 4,486,036, Cl. 285-253.000.
Storni, Angelo: *See—*
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,486,596, Cl. 549-239.000.
Storz, Werner, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG. Recycling arrangement for a hydraulic coupling. 4,485,902, Cl. 192-58.00B.

Stough, Donald M.: *See*—
Nelson, Robert L.; and Stough, Donald M., 4,486,166, Cl. 431-76.000.

Strangward, William J., to Langenau Manufacturing Company, The. Slide latch assembly for a casket. 4,486,040, Cl. 292-160.000.

Stratus Computer, Inc.: *See*—
Wolff, Kenneth T.; Samson, Joseph E.; and Baty, Kurt F., 4,486,826, Cl. 364-200.000.

Straub, Robert D.: *See*—
Deckard, John I.; and Straub, Robert D., 4,485,969, Cl. 239-88.000.

Streubel, Hans; and Thorner, Hans-Otto, to SMS Schloemann-Siemag AG. Strand guide rolls mounted coaxially and neighbouring one another in a continuous casting installation for casting steel slabs. 4,485,836, Cl. 164-442.000.

Stroezel, Reinhold; Schwarze, Wilhelm W.; Roll, Karl; Hettich, Alfred; and Raidt, Wolfgang, to Robert Bosch GmbH. Transducer for torque and/or angular displacement measurement, especially in power screwdrivers. 4,485,682, Cl. 73-862.360.

Strohmaier, Ernst: *See*—
Eibofner, Eugen; and Strohmaier, Ernst, 4,486,174, Cl. 433-104.000.

Strolle, Clifford H.: *See*—
Coughlin, James E.; Sommerfeld, Eugene G.; and Strolle, Clifford H., 4,486,508, Cl. 428-480.000.

Strong, Robert L.: *See*—
Huber, Doyle W.; Smith, Richard H.; and Strong, Robert L., 4,485,709, Cl. 83-324.000.

Strutz, Carl, Jr.; Strutz, Frank C.; Rudolph, Rome R., deceased; and by Rudolph, Kathleen, executrix. Ink-dispensing system and method for silk-screen printing having squeegee stroke movement counter. 4,485,736, Cl. 101-129.000.

Strutz, Frank C.: *See*—
Strutz, Carl, Jr.; Strutz, Frank C.; Rudolph, Rome R., deceased; and Rudolph, Kathleen, executrix, 4,485,736, Cl. 101-129.000.

Stuck, Earl N.; and Zackay, Victor F., to Teledyne Industries, Inc. Casting and coating with metallic particles. 4,486,470, Cl. 427-196.000.

Studt, William L.; Kuhla, Donald E.; Chou, Billy J.; and Yelnosky, John, to William H. Rorer, Inc. Treatment of coccidiosis. 4,486,439, Cl. 424-263.000.

Stuertz, William D.: *See*—
Hulber, Loren J.; and Stuertz, William D., 4,486,111, Cl. 402-17.000.

Stultz, Peter F.: *See*—
Lisutaud, James P.; Stultz, Peter F.; and Maloney, David L., 4,485,946, Cl. 224-242.000.

Stumpf, Walter; and Dillion, Paul J., to Simmons U.S.A. Corporation. Coil spring construction. 4,485,506, Cl. 5-477.000.

Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG: *See*—
Storz, Werner, 4,485,902, Cl. 192-58.00B.

Sue, Harry: *See*—
Christian, Raymond R.; Sue, Harry; Waggener, Herbert A.; and Zuercher, Joseph C., 4,485,553, Cl. 29-589.000.

Sueoka, Tetsuro; and Ishibashi, Satoshi, to Kabushiki Kaisha Meidensha. Amplified gate turn-off thyristor. 4,486,768, Cl. 357-38.000.

Sugawara, Mitsutoshi, to Nippon Electric Co., Ltd. High gain transistor amplifier producing an output free from noise carried on the power voltage. 4,486,718, Cl. 330-149.000.

Sugawara, Shinichi: *See*—
Nakao, Hideo; Fujimoto, Koichi; Ishihara, Sadao; Sugawara, Shinichi; and Igarashi, Isamu, 4,486,425, Cl. 424-246.000.

Sugi, Hiromi: *See*—
Furumura, Kyozaburo; Sugi, Hiromi; Murakami, Yasuo; and Asai, Hiromitsu, 4,486,026, Cl. 277-80.000.

Sugimoto, Hiroyuki; Fukaya, Kazuo; and Kogughi, Yoji, to Shinagawa Refractories, Co., Ltd.; Nippon Kokan Kabushiki Kaisha; and Nippon Sanso Kabushiki Kaisha. SiO_2-CaO Based low cubically expansive flame-spraying material. 4,486,545, Cl. 501-123.000.

Sugimoto, Kaname; and Miyake, Toshio, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Flurocarbon-water emulsion for hyperalimentation containing maltose. 4,486,417, Cl. 424-180.000.

Sugimoto, Masatoshi: *See*—
Okumoto, Tadaoki; Sugimoto, Masatoshi; Kawazoe, Takashi; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Funato, Kenichi, 4,486,480, Cl. 428-36.000.

Sugimoto, Mutsumi, to Katsuyama Kinzoku Kogyo Kabushiki Kaisha. Emergency locking retractor for a seat belt assembly. 4,485,986, Cl. 242-107.40A.

Sugimoto, Seii: *See*—
Tozawa, Seiichi; Sugimoto, Seii; and Kitamura, Toshio, 4,486,512, Cl. 428-623.000.

Sugimoto, Tatsuo; Shigyo, Seiji; Takashima, Kazutoshi; and Komaba, Yuichi, to Hitachi, Ltd.; and Hitachi Ome Electronic Co., Ltd. Wire bonder. 4,485,957, Cl. 228-4.500.

Sugiyama, Hiroyuki; Abe, Ryozo; and Sakakibara, Susumu, to Victor Company of Japan, Ltd. Drive circuit for feeding a reproducing element across a rotary medium having signals recorded thereon. 4,486,790, Cl. 358-342.000.

Sugo, Yuko; Yamamoto, Tadahiro; Arai, Motomi; and Saito, Masaaki, to Nissan Motor Company, Limited. Method of operating a single spot fuel injected internal combustion engine and apparatus for same. 4,485,791, Cl. 123-478.000.

Suhara, Manabu: *See*—
Miyake, Haruhisa; Suhara, Manabu; Mori, Hiroshi; and Saito, Yoshihiko, 4,486,277, Cl. 204-98.000.

Sukhova, Ljudmila M.: *See*—
Gorbacheva, Irina N.; Sukhova, Ljudmila M.; Kozinda, Zinaida J.; Molokov, Vladislav L.; Antonov, Lev T.; Simonov, Vadim D.; Chertov, Viktor A.; Dvoskin, Semen I.; and Veseneva, Raisa S., 4,486,347, Cl. 534-797.000.

Sulzer Brothers, Ltd.: *See*—
Eisenlohr, Franz, 4,485,848, Cl. 139-25.000.

Sumida, Susumu: *See*—
Hirukawa Koji; and Sumida, Susumu, 4,486,381, Cl. 376-210.000.

Sumisha, Hidemichi: *See*—
Kikuya, Satoshi; Sumisha, Hidemichi; and Minamide, Seiko, 4,485,988, Cl. 242-198.000.

Sumitomo Chemical Company, Limited: *See*—
Harada, Haruhisa; and Maki, Hiroshi, 4,486,605, Cl. 568-311.000.
Kisida, Hirosi; and Hatakoshi, Makoto, 4,486,449, Cl. 424-300.000.
Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, 4,486,223, Cl. 71-103.000.
Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, 4,486,604, Cl. 568-33.000.

Sumsion, Alton E.: *See*—
Ball, David M.; Sumsion, Alton E.; and Taylor, Zane S., 4,486,230, Cl. 75-96.000.

Sundstrand Corporation: *See*—
Jackovich, Melvin C.; Spencer, William; and Thom, James B., 4,486,801, Cl. 361-21.000.
Olson, Raymond N., 4,486,678, Cl. 310-156.000.

Sunlea Developments Pty. Ltd.: *See*—
Larkin, Bryan J., 4,486,008, Cl. 256-26.000.

Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., to Analgesic Associates. Analgesic and anti-inflammatory compositions comprising caffeine and methods of using same. 4,486,436, Cl. 424-253.000.

Sutch, Michael T.: *See*—
Moore, Jack M.; and Sutch, Michael T., 4,485,741, Cl. 102-331.000.

Sutton, Philip J.; Lyon, Byron W.; and Werner, Gunnar A. A., to Alfa-Laval, Inc. Milk metering method an apparatus. 4,485,762, Cl. 119-14.170.

Suzuki, Katsuhisa: *See*—
Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, 4,485,776, Cl. 123-198.00F.

Suzuki, Keijiro: *See*—
Mashiko, Masayoshi; and Suzuki, Keijiro, 4,486,513, Cl. 428-670.000.

Suzuki Motor Company Limited: *See*—
Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, 4,485,776, Cl. 123-198.00F.

Suzuki, Satoshi: *See*—
Ide, Masayuki; and Suzuki, Satoshi, 4,485,882, Cl. 180-68.600.

Suzuki, Yoshihisa: *See*—
Anahara, Meiji; and Suzuki, Yoshihisa, 4,485,528, Cl. 19-258.000.

Suzuki, Yujiro: *See*—
Maeoka, Hidehiko; Shimizu, Etsuo; Suzuki, Yujiro; Shimiya, Keiji; and Miura, Norio, 4,486,486, Cl. 428-212.000.

Swan, William C.; and Kastan, Howard, to Swan, William C.; Kastan, Howard; Magee, Richard; and Zugelter, Frank L., a part interest. Positive action basin wrench. 4,485,702, Cl. 81-98.000.

Swiggett, Brian E., to United States Surgical Corporation. Surgical stapler apparatus with flexible shaft. 4,485,817, Cl. 128-334.00R.

Swiss Aluminium Ltd.: *See*—
Huber, Ernst; Rieger, Wolfhart; and Bolliger, Martin, 4,485,835, Cl. 164-430.000.

Switaiski, Burkhardt: *See*—
Koch, Ulrich; Piotz, Peter; Kosig, Dieter; Langer, Jochen; Switaiski, Burkhardt; Schindler, H. Heinrich; and Wesselski, Willi, 4,486,123, Cl. 405-169.000.

Sykes, Donald J., to Marpac Industries, Inc. Closure for receptacles containing a pressurized gas. 4,485,933, Cl. 215-250.000.

Symonds, Collin E.: *See*—
Hodges, Wyndham; and Symonds, Collin E., 4,485,801, Cl. 126-386.000.

Szarazi, Bela: *See*—
Ser, Jean-Claude; N'Guyen, Quang L.; Millet, Catherine; and Szarazi, Bela, 4,486,448, Cl. 424-294.000.

Szego , Andras; Kovats, Ferenc; Peterdi, Viktoria; Bone , Istvan; Gombos, Laszlo ; Oz, Ferenc; and Simon, Imre, to Chinoin Gyogyszer Es Vegyeszeti Termekek Gyara R.T. Process for the preparation of stable aqueous suspensions of methyl N-(2-benzimidzolyl)-carbamate. 4,486,595, Cl. 548-306.000.

Szentkiralyi, Istvan: *See*—
Brendel nee Hajnoczki, Marta; Gulyas, Imre; Gyoker, Istvan; Zsupan, Kalman; Csorvassy, Istvan; Salamon, Zoltan; Somogyi, Gabor; Szentkiralyi, Istvan; Timar, Tibor; Biro nee Czapary, Eva; Fodor, Istvan; and Repasi, Janos, 4,486,359, Cl. 260-502.50F.

Szigeti, Zoltan: *See*—
Schwartz, Jozsef; Hornyak nee Hamori, Marya; Sagi, Janos; Marmarosi nee Kellner, Katalin; Radvanyi nee Hegedus, Erzsebet; Szigeti, Zoltan; Cseh, Edit; and Bujtas nee Tolgyes, Klara, 4,486,222, Cl. 71-100.000.

Tabler, Charles P., to Buckhorn Material Handling Group Inc. Container handling system. 4,485,910, Cl. 193-36.000.

Tachino, Kanzo; and Kajiyama, Ryuichi, to Mitsubishi Denki Kabushiki Kaisha. Elevator system. 4,485,895, Cl. 187-29.00R.

Tada, Ritsuro: *See*—
Takahashi, Akio; Ono, Masahiro; Tada, Ritsuro; Wajima, Motoyo; and Morishita, Hirosada, 4,486,583, Cl. 528-422.000.

Tadmor, Zehev, to USM Corporation. Rotary processors and devolatilizing methods for particulate materials. 4,486,099, Cl. 366-99.000.

Taenzer, Jon C., to SRI International. Real time stereo imaging. 4,486,076, Cl. 350-132.000.

Tafco Equipment Company: *See*—
Ankeny, V. Scott, 4,485,945, Cl. 224-42.060.

Taggart, Harry L., Jr. Device to permit movement of vehicle not having front or rear axle. 4,486,052, Cl. 301-130.000.

Taguchi, Fumiaki. Method for enhancing production of interferon. 4,486,407, Cl. 424-85.000.

Takacs, Lajos: *See*—
Adonyi, Ivan; Farkas, Endre; Hegedus, Gyula; Kormendy, Attila; Mogyorosi, Istvanne ; Molnar, Geza; Sass, Szilard; Scholler, Laszlo ; Takacs, Lajos; and Vitez, Gyorgy, 4,486,825, Cl. 364-200.000.

Takada, Jun; and Takaoka, Yukio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Exposure counter disc mechanism for cameras. 4,486,083, Cl. 354-203.000.

Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas cleaning device for internal combustion engine. 4,485,622, Cl. 60-296.000.

Takagi, Yasumasa; Sasaki, Tomohico; Matsumura, Tadanobu; and Gobuichi, Tadashi, to Fujitsu Limited. Power source terminal assembly. 4,486,058, Cl. 339-14.00R.

Takagiwa, Hiroyuki: *See*—
Murata, Hideki; Terada, Sadatugu; Tamaki, Kiyoshi; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, 4,486,559, Cl. 523-468.000.

Takahara, Minoru: *See*—
Kurauchi, Toshio; Takahashi, Hidero; Sato, Shigeyuki; Murase, Makoto; Takahara, Minoru; Ohi, Tamio; and Kamio, Takaki, 4,486,373, Cl. 264-142.000.

Takahashi, Akio; Ono, Masahiro; Tada, Ritsuro; Wajima, Motoyo; and Morishita, Hiroada, to Hitachi, Ltd. Heat-resistant resin from aromatic cyanamide compound and aromatic amine compound. 4,486,583, Cl. 528-422.000.

Takahashi, Hidero: *See*—
Kurauchi, Toshio; Takahashi, Hidero; Sato, Shigeyuki; Murase, Makoto; Takahara, Minoru; Ohi, Tamio; and Kamio, Takaki, 4,486,373, Cl. 264-142.000.

Takahashi, Hideyuki; Kenmotsu, Isami; Okajima, Takahiro; and Takahashi, Yoshio, to Pioneer Electric Corporation. Disc loading mechanism. 4,486,873, Cl. 369-77.100.

Takahashi, Kaoru, to Stanley Electric Company, Ltd. Method and apparatus for molding a synthetic resin lens for a light emitting diode. 4,486,364, Cl. 264-1.700.

Takahashi, Makoto: *See*—
Matsushita, Tsuyoshi; Takahashi, Makoto; and Takaishi, Kazuaki, 4,486,696, Cl. 318-696.000.

Takahashi, Masaru, to Mitsubishi Denki Kabushiki Kaisha. Shutter device for control unit of control center. 4,486,815, Cl. 361-345.000.

Takahashi, Minoru: *See*—
Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; Funaki, Hirozo; Seimaya, Ryubun; Yamada, Yutaka; Tomono, Makoto; and Tarumi, Noriyoshi, 4,486,524, Cl. 430-109.000.

Takahashi, Yoshinobu: *See*—
Mori, Takanobu; Takahashi, Yoshinobu; and Murase, Haruo, 4,486,284, Cl. 204-181.00R.

Takahashi, Yoshio: *See*—
Takahashi, Hideyuki; Kenmotsu, Isami; Okajima, Takahiro; and Takahashi, Yoshio, 4,486,873, Cl. 369-77.100.

Takahashi, Yuji, to Canon Kabushiki Kaisha. Sheet diverting device for copying apparatus or the like. 4,486,015, Cl. 271-305.000.

Takaishi, Kazuaki: *See*—
Matsushita, Tsuyoshi; Takahashi, Makoto; and Takaishi, Kazuaki, 4,486,696, Cl. 318-696.000.

Takano, Toshio, to Fuji Jokogyo Kabushiki Kaisha. Automatic transmission for a four-wheel drive vehicle. 4,485,886, Cl. 180-247.000.

Takaoka, Yukio: *See*—
Takada, Jun; and Takaoka, Yukio, 4,486,083, Cl. 354-203.000.

Takasaki, Kunihiko, to Takigen Seizou Co., Ltd. Door handle unit. 4,486,041, Cl. 292-221.000.

Takase, Hatsuo: *See*—
Nishimura, Takaaki; and Takase, Hatsuo, 4,485,790, Cl. 123-468.000.

Takashima, Kazutoshi: *See*—
Sugimoto, Tatsuo; Shigyo, Seiji; Takashima, Kazutoshi; and Komaba, Yuichi, 4,485,957, Cl. 228-4.500.

Takata, Naoto; and Kanai, Seita, to Mazda Motor Corporation. Rear suspension apparatus for motor vehicle. 4,486,030, Cl. 280-689.000.

Takeda Chemical Industries, Ltd.: *See*—
Horii, Satoshi; Kameda, Yukihiko; and Fukase, Hiroshi, 4,486,602, Cl. 564-360.000.
Kawamatsu, Yutaka; Fujita, Takeshi; and Yamamoto, Yujiro, 4,486,594, Cl. 548-183.000.

Takeda Riken Co. Ltd.: *See*—
Aoki, Tetsuo, 4,486,750, Cl. 340-825.000.

Takemae, Yoshihiro; and Nakano, Tomio, to Fujitsu Limited. System for driving a dynamic random access memory device. 4,486,860, Cl. 365-222.000.

Takematsu, Yoshiyuki, to Fuji Koeki Kabushiki Kaisha. Test flash device for flash discharger. 4,486,690, Cl. 315-151.000.

Takenoya, Hideaki: *See*—
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kume, Toshiaki; and Kakimura, Toshihide, 4,485,750, Cl. 112-158.00E.

Takeshima, Kiyoshi; and Nakada, Yoshinori, to Yoshida Kogyo K.K. Slide fastener chain and method of manufacturing the same. 4,485,533, Cl. 24-383.000.

Takeuchi, Kunio; and Inamori, Takao, to Toyota Jidosha Kabushiki Kaisha. Press sublifter with a movable gauge. 4,485,660, Cl. 72-313.000.

Takeuchi, Yukihisa: *See*—
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,485,622, Cl. 60-296.000.

Takeya, Yasushi: *See*—
Naya, Eizo; Horiuchi, Toshiaki; Takeya, Yasushi; Inagaki, Kouichi; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,486,631, Cl. 200-144.00B.

Taki, Yoshihiro: *See*—
Miyakawa, Susumu; Akado, Hajime; Taki, Yoshihiro; Hikida, Kenji; and Nakayama, Toshiaki, 4,486,206, Cl. 55-337.000.

Takigen Seizou Co., Ltd.: *See*—
Takasaki, Kunihiko, 4,486,041, Cl. 292-221.000.

Takumi, Hiroshi, to Shinko Machinery Co., Ltd. Apparatus for raising hooks of semi-finished spring products. 4,485,851, Cl. 140-103.000.

Tamada, Kazukiyo: *See*—
Harada, Shinichi; Furuya, Katsuhiko; and Tamada, Kazukiyo, 4,485,812, Cl. 128-303.150.

Tamaki, Kiyoshi: *See*—
Murata, Hideki; Terada, Sadatugu; Tamaki, Kiyoshi; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, 4,486,559, Cl. 523-468.000.

Tamaru, Shigemi: *See*—
Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Eguchi, Kiyoshi, 4,486,814, Cl. 361-339.000.

Tanabe Seiyaku Co., Ltd.: *See*—
Samejima, Masayoshi; Hirata, Goichi; Koida, Yoshiyuki; and Kida, Akira, 4,486,471, Cl. 427-213.300.

Tanabe, Toru: *See*—
Hashimoto, Kenshiro; Okazaki, Kunio; Tanabe, Toru; and Koguro, Toshio, 4,486,818, Cl. 362-65.000.

Tanahashi, Haruhiko, to Toyota Jidosha Kabushiki Kaisha. Upper support structure for front wheel suspension of automobile. 4,486,028, Cl. 280-668.000.

Tanaka, Akira: *See*—
Yoshida, Yukio; Tanaka, Akira; Fukumoto, Ryutaro; Akimoto, Ryosaku; Tanaka, Shigetoshi; and Ito, Nobuaki, 4,485,863, Cl. 165-42.000.

Tanaka, Etsuo: *See*—
Sato, Akihiko; Nakano, Yoshiyuki; and Tanaka, Etsuo, 4,486,084, Cl. 354-246.000.

Tanaka, Nobuyoshi; and Kinoshita, Takao, to Canon Kabushiki Kaisha. Solid state image sensing device. 4,486,783, Cl. 358-213.000.

Tanaka, Shigetoshi: *See*—
Yoshida, Yukio; Tanaka, Akira; Fukumoto, Ryutaro; Akimoto, Ryosaku; Tanaka, Shigetoshi; and Ito, Nobuaki, 4,485,863, Cl. 165-42.000.

Tanaka, Susumu; and Oka, Tateki, to Minolta Camera Kabushiki Kaisha. Dry process developing method and device employed therefor. 4,485,760, Cl. 118-657.000.

Tanaka, Yoshitsugu, to Ricoh Company Ltd. Semi-automatic paper insertion apparatus. 4,486,108, Cl. 400-639.100.

Taniguchi, Keishi; Iwata, Susumu; and Sakamoto, Hiroshi, to Ricoh Company, Ltd. Thermosensitive recording material. 4,486,763, Cl. 346-209.000.

Tanikawa, Isao: *See*—
Hirata, Sadao; Tanikawa, Isao; and Maruhashi, Yoshitsugu, 4,486,378, Cl. 264-512.000.

Tanimoto, Isao; Yamada, Tsuneo; and Yamada, Katsuhisa, to Alps Electric Co., Ltd. Method of manufacturing tuner chassis. 4,486,510, Cl. 428-598.000.

Tank-Tote Co.: *See*—
Gordon, Harris K.; and Myers, Howard, 4,486,044, Cl. 294-31.200.

Taplin, Lael B.: *See*—
Walter, Richard P.; and Taplin, Lael B., 4,485,789, Cl. 123-467.000.

Tardieu, Pierre R.; and Mulet-Marquis, Yves H., to Kollmorgen Technologies Corporation. Hand held device with built-in motor. 4,486,176, Cl. 433-133.000.

Tarnowski, Andrew A., to Image Graphics, Incorporated. Particle beam recorder system having a referencing means for establishing registration holes in a film substrate. 4,486,761, Cl. 346-161.000.

Tarumi, Noriyoshi: *See*—
Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; Funaki, Hirozo; Seimaya, Ryubun; Yamada, Yutaka; Tomono, Makoto; and Tarumi, Noriyoshi, 4,486,524, Cl. 430-109.000.

Taton, Michel: *See*—
Morisot, Bernard; and Taton, Michel, 4,486,621, Cl. 174-50.000.

Tatsuguchi, Kazuo: *See*—
Wada, Yoshiyo; Kinjo, Hisao; Ueno, Ichiro; Honjo, Yoshihiko; Tatsuguchi, Kazuo; and Shikunami, Juichi, 4,486,791, Cl. 358-342.000.

Taylor, Brian H.: *See*—
Freeman, Albert L.; Taylor, Brian H.; and Smith, Roy E. R., 4,486,727, Cl. 335-106.000.

Taylor, Ralph C., Jr.; and Vaniglia, Christopher L., to Cincinnati Milacron Inc. Programmable control apparatus and method. 4,486,830, Cl. 364-146.000.

Taylor, William L.: *See*—
Soule, Eugene A.; Taylor, William L.; and Walker, Robert H., 4,485,894, Cl. 187-9.00E.

Taylor, Zane S.: *See*—
Ball, David M.; Sumsion, Alton E.; and Taylor, Zane S., 4,486,230, Cl. 75-96.000.
TDK Electronics Co., Ltd.: *See*—
Saito, Seitoku, 4,486,498, Cl. 428-333.000.
Technicare Corporation: *See*—
Rudolph, Dale C.; and Ray, Michael D., 4,486,114, Cl. 403-27.000.
Technion Research & Development Foundation, Ltd.: *See*—
Lewin, Gerhard; and Nir, Dan, 4,486,286, Cl. 204-192.00C.
Technology Unlimited Inc.: *See*—
Jacob, Joseph, 4,486,191, Cl. 604-330.000.
Teeter, Terry E.: *See*—
Olmstead, Richard E., Jr.; and Teeter, Terry E., 4,485,686, Cl. 74-331.000.
Teipel, John W., to Ortho Diagnostic Systems Inc. Immunoassay microparticle washing system and method of use. 4,486,315, Cl. 210-772.000.
Tejeda, Alvaro R. Membrane process for converting sodium sulfate into sulfuric acid and sodium carbonate. 4,486,283, Cl. 204-180.00P.
Tektronix, Inc.: *See*—
Yamaguchi, Tadanori, 4,486,266, Cl. 156-643.000.
Teledyne Industries, Inc.: *See*—
Fisher, Leo; and Weiser, Atilla, 4,486,175, Cl. 433-104.000.
Stuck, Earl N.; and Zackay, Victor F., 4,486,470, Cl. 427-196.000.
Telefongyar: *See*—
Adonyi, Ivan; Farkas, Endre; Hegedus, Gyula; Kormendy, Attila; Mogyorosi, Istvanne ; Molnar, Geza; Sass, Szilard; Scholler, Laszlo ; Takacs, Lajos; and Vitez, Gyorgy, 4,486,825, Cl. 364-200.000.
Telemet American, Inc.: *See*—
Parsons, Frederick G., 4,486,853, Cl. 364-900.000.
Teletype Corporation: *See*—
Christian, Raymond R.; Sue, Harry; Waggener, Herbert A.; and Zuercher, Joseph C., 4,485,553, Cl. 29-589.000.
Heckel, George; and Ollendick, Gary B., 4,486,856, Cl. 364-900.000.
Tennessee Valley Authority: *See*—
Hsieh, Shuang-shii; and Lehr, James R., 4,486,301, Cl. 209-167.000.
Tensor Geophysical Service Corporation: *See*—
French, William S., 4,486,863, Cl. 367-15.000.
Terada, Sadatugu: *See*—
Murata, Hideki; Terada, Sadatugu; Tamaki, Kiyoshi; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, 4,486,559, Cl. 523-468.000.
Terakado, Katsuyoshi: *See*—
Asahi, Naotatsu; Yamaguchi, Shizuka; Kojima, Yoshitaka; and Terakado, Katsuyoshi, 4,486,462, Cl. 427-39.000.
Terashima, Takashi: *See*—
Sonoda, Masakazu; Terashima, Takashi; and Ozawa, Minoru, 4,486,692, Cl. 318-258.000.
Terrat, Jean-Paul: *See*—
Aubert, Andre ; Chevallier, Jacques; Gaucher, Antoine; and Terrat, Jean-Paul, 4,486,285, Cl. 204-192.00C.
Texaco Inc.: *See*—
Davis, Lorne A., Jr.; and Brost, Dale F., 4,486,714, Cl. 324-376.000.
Scott, Hubert D.; and Campsey, Ronald L., 4,486,658, Cl. 250-268.000.
Texas Instruments Incorporated: *See*—
Kawate, Keith W.; and Haug, John A., 4,486,700, Cl. 318-781.000.
Texas Recreation Corporation: *See*—
Hancock, Kendal, 4,486,368, Cl. 264-46.700.
Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft: *See*—
Anzinger, Rupert, 4,485,618, Cl. 57-352.000.
Tezuka, Hirofumi: *See*—
Baba, Yasushi; Tezuka, Hirofumi; and Kitagawa, Kohzo, 4,486,820, Cl. 362-183.000.
Th. Goldschmidt AG: *See*—
Fritsch, Herwig; Koerner, Gotz; Quilitsch, Herbert; and Schamberg, Eckehard, 4,486,476, Cl. 427-387.000.
Thewalt, Michael L.: *See*—
Parsons, Robert R.; McMahon, Richard; and Thewalt, Michael L., 4,486,289, Cl. 204-298.000.
Thiele, Heino; Weber, Werner; Zettler, Hans D.; Schlueter, Klaus; Wallner, Josef; and Seid, Bernhard, to BASF Aktiengesellschaft. Mixing apparatus for multi-component plastics, especially polyurethane. 4,486,102, Cl. 366-182.000.
Thieler, Wolfgang: *See*—
Lutz, Dieter; and Thieler, Wolfgang, 4,485,906, Cl. 192-106.100.
Thiokol Corporation: *See*—
Bell, Frank H., 4,486,251, Cl. 149-2.000.
Thom, James B.: *See*—
Jackovich, Melvin C.; Spencer, William; and Thom, James B., 4,486,801, Cl. 361-21.000.
Thomas, Daniel C.; and Sorkin, Jack L., to Richardson Graphics Company. Lithographic plate and photoresist having photosensitive layers of diazo and cinnamoylated phenol-blocked isocyanate polyurethane materials. 4,486,526, Cl. 430-156.000.
Thomas, John E.: *See*—
Tippins, George W.; Thomas, John E.; Connolly, Richard S.; Pine, Charles K.; and Pottmeyer, Wayne G., 4,485,651, Cl. 72-12.000.
Thomas, Lowell S., to Dow Chemical Company, The. Carbonate polymer containing an ignition depressant composition. 4,486,560, Cl. 524-100.000.
Thompson, Jerome B. Sodium-reduced baked dough products and method. 4,486,456, Cl. 426-549.000.
Thompson, Jerome B. Process for preparing cellulose. 4,486,459, Cl. 426-634.000.
Thompson, Virley P. Bacteria destroying apparatus for use with voice communication systems. 4,486,628, Cl. 179-185.000.
Thompson, Wayne L.; and Bailey, Bert E., to Ercon Corporation. Stabilization against water erosion. 4,486,121, Cl. 405-17.000.
Thomson-CSF: *See*—
de Cousanon, Tristan, 4,486,881, Cl. 371-38.000.
Epsztein, Bernard, 4,486,687, Cl. 315-14.000.
Fraleux, Jean; and Ploix, Jean L., 4,486,767, Cl. 357-23.000.
Thor Cryogenics Limited: *See*—
Turner, David W., 4,486,659, Cl. 250-306.000.
Thorner, Hans-Otto: *See*—
Streubel, Hans; and Thorner, Hans-Otto, 4,485,836, Cl. 164-442.000.
Thornton, Francis J.: *See*—
Pratt, Richard L.; and Thornton, Francis J., 4,486,744, Cl. 340-606.000.
Thornton, Marvin L. Wastewater trickling filter air recirculation process. 4,486,310, Cl. 210-604.000.
3 S Beton B.V.: *See*—
Savelkouls, Wilhelmus, 4,485,930, Cl. 211-74.000.
Tielert, Reinhard: *See*—
Risch, Lothar; Feigt, Ingmar; and Tielert, Reinhard, 4,486,778, Cl. 358-111.000.
Tietze, Rudiger W.: *See*—
Wilmer, Michael E.; Green, Leland D.; and Tietze, Rudiger W., 4,486,781, Cl. 358-163.000.
Timar, Tibor: *See*—
Brendel nee Hajnoczki, Marta; Gulyas, Imre; Gyoker, Istvan; Zsupan, Kalman; Csorvassy, Istvan; Salamon, Zoltan; Somogyi, Gabor; Szentkiralyi, Istvan; Timar, Tibor; Biro nee Czapary, Eva; Fodor, Istvan; and Repasi, Janos, 4,486,359, Cl. 260-502.50P.
Tippins, George W.; Thomas, John E.; Connolly, Richard S.; Pine, Charles K.; and Pottmeyer, Wayne G., to Tippins Machinery Company, Inc. Method and apparatus for underwinding strip on a drum. 4,485,651, Cl. 72-12.000.
Tippins Machinery Company, Inc.: *See*—
Tippins, George W.; Thomas, John E.; Connolly, Richard S.; Pine, Charles K.; and Pottmeyer, Wayne G., 4,485,651, Cl. 72-12.000.
Tnanbe Seiyaku Co., Ltd.: *See*—
Chibata, Ichiro; Tosa, Tetsuya; Sato, Tadashi; and Yamamoto, Kozo, 4,486,532, Cl. 435-145.000.
Todd, Craig C., to Dolby Laboratories Licensing Corporation. Reduction of crosstalk effects in modulated audio signals carried in adjacent tracks of recorded media. 4,486,793, Cl. 360-30.000.
Tojiki, Hitomi: *See*—
Gocho, Nagahiro; Tojiki, Hitomi; Hayashi, Asao; Kambara, Koji; and Nobuto, Toru, 4,486,787, Cl. 358-296.000.
Tokai Electric Wire Company, Ltd.: *See*—
Kasugai, Masakuni, 4,486,062, Cl. 339-91.00R.
Tokico Ltd.: *See*—
Kato, Tetuo; Miura, Ieaki; Ashiba, Masahiro; and Imaizumi, Tomio, 4,485,900, Cl. 188-282.000.
Tokumitsu, Kiyonori: *See*—
Yamamoto, Sakuei; Inao, Hiroshi; Tokumitsu, Kiyonori; Nishida, Mitsuhiro; Ishikawa, Takatoshi; and Sakabe, Shigekazu, 4,486,677, Cl. 310-64.000.
Tokura, Isao: *See*—
Yamada, Mitsuhiko; and Tokura, Isao, 4,485,964, Cl. 234-2.000.
Tokyo Denpa Kabushiki Kaisha: *See*—
Ishigami, Sumiyuki; and Sato, Mitsuru, 4,486,681, Cl. 310-353.000.
Tokyo Electric Co.: *See*—
Matsushita, Tsuyoshi; Takahashi, Makoto; and Takaishi, Kazuaki, 4,486,696, Cl. 318-696.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Hara, Kenkichi; Yokoe, Shigeo; Oka, Kazuyoshi; Murakami, Tamotsu; and Hashimoto, Tsugifusa, 4,486,502, Cl. 428-405.000.
Hirukawa Koji; and Sumida, Susumu, 4,486,381, Cl. 376-210.000.
Iinuma, Kazahiro, 4,485,821, Cl. 128-663.000.
Karijuku, Akira, 4,486,892, Cl. 377-43.000.
Kenjo, Susumu; Shimahara, Minoru; and Gokyu, Toshio, 4,486,506, Cl. 428-475.200.
Kobayashi, Shunichi, 4,486,706, Cl. 324-133.000.
Koike, Hideharu, 4,486,673, Cl. 307-279.000.
Saeki, Yukihiro; and Uchida, Kazuyuki, 4,486,753, Cl. 340-825.910.
Umemura, Akihiro; Kunii, Hisayoshi; Shimizu, Michiyasu; and Sato, Yoshinari, 4,485,744, Cl. 108-51.100.
Tokyo Shibaura Kenki Kabushiki Kaisha: *See*—
Sakamoto, Noriaki, 4,485,639, Cl. 62-505.000.
Tomari, Haruo: *See*—
Fujiwara, Kazuo; Tomari, Haruo; Aritomi, Osamu; and Sato, Nobuhiro, 4,486,231, Cl. 75-125.000.
Tomcufcik, Andrew S.; and Sloboda, Adolph E., to American Cyanamid Company. Method of treating arthritic disease. 4,486,430, Cl. 424-249.000.
Tomita, Eihachiro; and Ota, Mitsuru, to Kureha Kagaku Kogyo Kabushiki Kaisha; and Radio Research & Technical Incorporated. Electrode lead tab for capacitor. 4,486,810, Cl. 361-306.000.
Tomita, Masahiro: *See*—
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,485,622, Cl. 60-296.000.
Tomoff, Judith M. Educational game device of the colored pattern type. 4,486,023, Cl. 273-348.000.

Tomono, Makoto: *See*—
Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; Funaki, Hirozo; Seimaya, Ryubun; Yamada, Yutaka; Tomono, Makoto; and Tarumi, Noriyoshi, 4,486,524, Cl. 430-109.000.

Tootle, James N., to Pneumo Corporation. Actuator system including hydraulically synchronized actuators. 4,485,725, Cl. 91-45.000.

Toray Industries, Inc.: *See*—
Asakura, Toshiyuki; Kobayashi, Hiroaki; and Noguchi, Yukio, 4,486,578, Cl. 525-535.000.
Oishi, Takashi, 4,485,535, Cl. 28-162.000.
Shoji, Hisataka; and Ouchi, Shigehiro, 4,485,838, Cl. 164-462.000.

Toray Silicone Co., Ltd.: *See*—
Matsushita, Takao; and Shimizu, Koji, 4,486,495, Cl. 428-266.000.
Nakasuji, Katsuyoshi; and Saruyama, Toshio, 4,486,566, Cl. 524-788.000.

Torresdal, David N., to Davtron, Inc. Digital meter with uniform illumination and less inadvertent setting. 4,486,077, Cl. 350-331.00R.

Tosa, Tetsuya: *See*—
Chibata, Ichiro; Tosa, Tetsuya; Sato, Tadashi; and Yamamoto, Kozo, 4,486,532, Cl. 435-145.000.

Toshiba Heating Appliances Co., Ltd.: *See*—
Tsukada, Ichiro; Kato, Yoshio; and Sakai, Tadashi, 4,486,170, Cl. 431-315.000.

Toth, Bela: *See*—
Baksa, Gyorgy; Boros, Jozsef; Horvath, Gyula; Ihasz, Balazs; Pais, Zoltan; Rainis, Matyas; Sitkei, Ferenc; Solymar, Karoly; Toth, Bela; Vallo, Ferenc; Voros, Istvan; Orban nee Kelemen, Maria; and Zoldi, Jozsef, 4,486,393, Cl. 423-121.000.

Townsley, Charles W.: *See*—
Baker, Josefina T.; Lawrence, Paul J.; and Townsley, Charles W., 4,486,536, Cl. 436-66.000.

Toyo Engineering Corp.: *See*—
Shinohara, Takanobu; Anzai, Toshio; and Shinogaya, Tatsuji, 4,486,472, Cl. 427-239.000.

Toyo Jozo Company, Ltd.: *See*—
Matsumoto, Kunio; Izumi, Rokuro; Seijo, Hideji; and Mizuguchi, Hiroyuki, 4,486,549, Cl. 521-53.000.

Toyo Kogyo Co., Ltd.: *See*—
Fujimoto, Misao; Ishii, Shoso; Yada, Yoshikuni; and Imazu, Shigeki, 4,485,625, Cl. 60-601.000.

Toyo Seikan Kaisha Ltd.: *See*—
Hirata, Sadao; Tanikawa, Isao; and Maruhashi, Yoshitsugu, 4,486,378, Cl. 264-512.000.

Toyoda Gosei Co., ltd.: *See*—
Okumoto, Tadaoki; Sugimoto, Masatoshi; Kawazoe, Takashi; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Funato, Kenichi, 4,486,480, Cl. 428-36.000.

Toyomura, Shigeru, to Canon Kabushiki Kaisha. Electronic equipment. 4,486,759, Cl. 346-76.0PH.

Toyota Jidosha Kabushiki Kaisha: *See*—
Isobe, Masahiro, 4,485,999, Cl. 248-659.000.
Itoh, Hiroshi; and Endo, Motoki, 4,486,838, Cl. 364-424.100.
Kanda, Mutsumi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,485,773, Cl. 123-188.00M.
Kanda, Mutsumi; Nakanishi, Kiyoshi; Okumura, Takeshi; Kotani, Takeshi; and Inoue, Tokuta, 4,485,774, Cl. 123-188.00M.
Kanda, Mutsumi; Nakanishi, Kiyoshi; Okumura, Takeshi; Kotani, Takeshi; and Inoue, Tokuta, 4,485,775, Cl. 123-188.00M.
Mori, Takanobu; Takahashi, Yoshinobu; and Murase, Haruo, 4,486,284, Cl. 204-181.00R.
Okumoto, Tadaoki; Sugimoto, Masatoshi; Kawazoe, Takashi; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Funato, Kenichi, 4,486,480, Cl. 428-36.000.
Takeuchi, Kunio; and Inamori, Takao, 4,485,660, Cl. 72-313.000.
Tanahashi, Haruhiko, 4,486,028, Cl. 280-668.000.
Tsuge, Eiji; and Chujo, Takeshi, 4,485,707, Cl. 83-82.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kojima, Yasuhumi; Yoshimi, Akiro; Kamiya, Michihiko; Ootsuka, Fumio; and Matsushima, Takeo, 4,486,837, Cl. 364-424.000.
Moriguchi, Koichi; Iwamoto, Kenzi; Kawai, Hisai; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,485,626, Cl. 60-602.000.
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,485,622, Cl. 60-296.000.
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,485,772, Cl. 123-179.00B.

Tozawa, Seiichi; Sugimoto, Seii; and Kitamura, Toshio, to Mitsui Mining & Smelting Co., Ltd. Radioactive waste sealing container. 4,486,512, Cl. 428-623.000.

Trainer, David: *See*—
Higgins, John C.; Wright, Harvie R. C.; and Trainer, David, 4,485,666, Cl. 73-23.000.

Tramposch, Herbert; Randmer, Glen J.; and Miller, Walter E., to Pitney Bowes Inc. Shift adjustment for a load cell. 4,485,881, Cl. 177-211.000.

Tranchant, Jean-Louis: *See*—
Douchy, Michel; Tranchant, Jean-Louis; and Jehan, Michel, 4,486,227, Cl. 75-53.000.

Trans-Aire International, Inc.: *See*—
Higgins, Bob J., 4,485,523, Cl. 16-94.00D.

Transformatoren Union Aktiengesellschaft: *See*—
Broszat, Gottfried, 4,486,730, Cl. 336-69.000.

Treiber, Fritz F., to Hobart Corporation. Conveyor drive system. 4,485,913, Cl. 198-790.000.

Trendway Corporation: *See*—
Flamboe, Donald R., Jr.; and VanderKooi, David L., 4,485,602, Cl. 52-239.000.

Trine, Richard D.; and Vasilakes, Lloyd S., to Minnesota Mining and Manufacturing Company. Uniform twisted wire pair electrical ribbon cable. 4,486,619, Cl. 174-34.000.

Triplett, Jacob: *See*—
Lordi, Frank E.; and Triplett, Jacob, 4,486,570, Cl. 525-93.000.

Trommelen, August M.: *See*—
Schijf, Robert; Trommelen, August M.; and Lansbergen, Gabriel J. T., 4,486,457, Cl. 426-603.000.

Trop, Harvey S.: *See*—
Abys, Joseph A.; and Trop, Harvey S., 4,486,274, Cl. 204-44.000.

Troup, Robert L.; and Stevenson, David T., to Aluminum Company of America. Carbothermic reduction with parallel heat sources. 4,486,229, Cl. 75-68.00R.

Troutner, Vernon H.; and Morrow, Richard A., to Extracorporeal Medical Specialties, Inc. Dual mode hemodialysis system. 4,486,189, Cl. 604-5.000.

Trusock, George J.: *See*—
Chichester, Willard L.; and Trusock, George J., 4,485,623, Cl. 60-422.000.

TRW Inc.: *See*—
Shoup, Thomas E., 4,486,644, Cl. 219-99.000.

Trygg, Lars E. Bottle-gripping device. 4,486,045, Cl. 294-87.00R.

Tsentralny Nauchnoissledovatelsky Institut Shersti: *See*—
Gorbacheva, Irina N.; Sukhova, Ljudmila M.; Kozinda, Zinaida J.; Molokov, Vladislav L.; Antonov, Lev T.; Simonov, Vadim D.; Chertov, Viktor A.; Dvoskin, Semen I.; and Veseneva, Raisa S., 4,486,347, Cl. 534-797.000.

Tsubota, Motohiko: *See*—
Morigaki, Masakazu; and Tsubota, Motohiko, 4,486,528, Cl. 430-218.000.

Tsudakoma Kogyo Kabushiki Kaisha: *See*—
Tsuji, Kanji, 4,485,850, Cl. 139-435.000.

Tsuge, Eiji; and Chujo, Takeshi, to Toyota Jidosha Kabushiki Kaisha. Method of conveying sheets, and blanking die assembly in a pinch press. 4,485,707, Cl. 83-82.000.

Tsuji, Kanji, to Tsudakoma Kogyo Kabushiki Kaisha. Auxiliary device for weft insertion on an air jet loom. 4,485,850, Cl. 139-435.000.

Tsukada, Ichiro; Kato, Yoshio; and Sakai, Tadashi, to Toshiba Heating Appliances Co., Ltd. Liquid fuel combustion apparatus. 4,486,170, Cl. 431-315.000.

Tsunoi, Haruo: *See*—
Sato, Tadashi; and Tsunoi, Haruo, 4,486,786, Cl. 358-293.000.

Turner, David W., to Thor Cryogenics Limited. Emisson-electron microscope. 4,486,659, Cl. 250-306.000.

Turner, Jonathan S., to AT&T Bell Laboratories. Packet switching loop-around network and facilities testing. 4,486,877, Cl. 370-15.000.

Turunen, Olli; Mandell, Leo; Eklund, Vidar; Ekman, Kurt; and Huttunen, Jouko, to Neste Oy. Procedure for producing soluble cellulose derivatives. 4,486,585, Cl. 536-30.000.

Ube Industries, Ltd.: *See*—
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, 4,486,376, Cl. 264-342.00R.

Uchida, Kazuyuki: *See*—
Saeki, Yukihiro; and Uchida, Kazuyuki, 4,486,753, Cl. 340-825.910.

Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic engine stop-restart system. 4,485,772, Cl. 123-179.00B.

Uddborn, Hans G.: *See*—
Iverlund, Bertil G.; Risman, Per Olov G.; and Uddborn, Hans G., 4,485,564, Cl. 34-1.000.

Udono, Jun; and Ideta, Yasufumi, to Nissan Motor Company, Limited. Vacuum system for an automotive vehicle. 4,485,904, Cl. 192-0.094.

Ueda, Kosaku. Collapsible telescope. 4,486,079, Cl. 350-546.000.

Uede, Hisashi: *See*—
Nonomura, Keisaku; Matsuura, Masataka; Uede, Hisashi; Kishi, Kohhei; and Kato, Hiroaki, 4,486,748, Cl. 340-756.000.

Uehara, Seigo: *See*—
Kawamoto, Hideo; and Uehara, Seigo, 4,486,799, Cl. 360-130.230.

Ueno, Ichiro: *See*—
Wada, Yoshiyo; Kinjo, Hisao; Ueno, Ichiro; Honjo, Yoshihiko; Tatsuguchi, Kazuo; and Shikunami, Juichi, 4,486,791, Cl. 358-342.000.

Ueno, Tsutomu: *See*—
Ebata, Yoshihiro; Kose, Saburo; Kinoshita, Makoto; and Ueno, Tsutomu, 4,486,257, Cl. 156-325.000.

Uken, Harvey J. Shield unit for cultivators. 4,485,878, Cl. 172-510.000.

Umemura, Akihiro; Kunii, Hisayoshi; Shimizu, Michiyasu; and Sato, Yoshinari, to Tokyo Shibaura Denki Kabushiki Kaisha. Metal pallet. 4,485,744, Cl. 108-51.100.

Umezawa, Hamao; and Kondo, Shinichi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. 5,2',3',4',4'',6''-Hexadeoxykanamycin and its 1-N-acylated derivative. 4,486,419, Cl. 424-180.000.

Ungerleider, Hugh J., to D.O.C.E Corporation. Cooking oil salvage system. 4,485,831, Cl. 137-1.000.

Ungermann, Ralph K.: *See*—
Shima, Masatoshi; Faggin, Federico; and Ungermann, Ralph K., 4,486,827, Cl. 364-200.000.

Unie Van Kunstmestfabrieken B.V.: *See*—
Kassenbrood, Petrus J. C., 4,486,270, Cl. 202-201.000.

Union Carbide Corporation: *See*—
Chaney, Earl J., Jr., 4,486,514, Cl. 429-56.000.
Colon, Ismael; and Merriam, Charles N., 4,486,576, Cl. 525-471.000.
D'Silva, Themistocles D. J., 4,486,447, Cl. 424-285.000.

Glass, Joseph E., Jr., 4,486,340, Cl. 252-8.55D.
Lucchesi, Peter J.; Kurtz, Stuart J.; and Roberts, Ernest H., 4,486,377, Cl. 264-510.000.
United Kingdom Atomic Energy Authority: *See—*
Jones, Edward L., 4,486,666, Cl. 250-497.100.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Carter, Cecil G., 4,486,869, Cl. 367-154.000.
United States of America
Army: *See—*
F'Geppert, Erwin, 4,486,479, Cl. 428-35.000.
Nakazawa, Mitsuo; Ballato, Arthur; and Lukaszek, Theodore J., 4,486,682, Cl. 310-361.000.
Schmidt, Jimmy Q., 4,486,710, Cl. 324-179.000.
Energy: *See—*
Leung, Ka-Ngo; and Ehlers, Kenneth W., 4,486,665, Cl. 250-427.000.
Reimann, Robert C., 4,485,638, Cl. 62-476.000.
Schenone, Carl E.; and Rosinski, Joseph, 4,486,199, Cl. 48-197.00R.
Environmental Protection Agency: *See—*
Pershing, David W.; Martin, George B.; and Munro, James M., 4,485,747, Cl. 110-347.000.
Health and Human Services: *See—*
Brauer, Gerhard M.; and Stansbury, Jeffrey W., 4,486,179, Cl. 433-199.000.
National Aeronautics and Space Administration: *See—*
Camarda, Charles J.; and Couch, Lana M., 4,485,670, Cl. 73-179.000.
Kershner, David D., 4,485,671, Cl. 73-187.000.
Rao, Dhanvada M., 4,485,992, Cl. 244-90.00R.
Navy: *See—*
Bush, Ira J., 4,486,657, Cl. 250-227.000.
Newman, Brian A.; Pae, Kook D.; and Scheinbeim, Jerry I., 4,486,683, Cl. 310-800.000.
U.S. Philips Corporation: *See—*
de Ronde, Frans C., 4,486,758, Cl. 343-700.0MS.
Diefenbach, Gerhard; and Krainer, Erich, 4,486,697, Cl. 318-703.000.
Havermans, Gerardus M. J., 4,486,878, Cl. 370-60.000.
Le Floch, Gerard, 4,486,716, Cl. 329-107.000.
Marinus, Antonius, 4,486,822, Cl. 363-19.000.
Palm, Erich J., 4,486,823, Cl. 363-21.000.
Piret, Philippe M. O. A.; and Krol, Thijs, 4,486,882, Cl. 371-45.000.
Richter, Detlev; and Burrig, Thomas, 4,486,896, Cl. 378-108.000.
Schofield, John, 4,486,724, Cl. 333-194.000.
Shannon, John M., 4,486,766, Cl. 357-15.000.
United States Steel Corporation: *See—*
Ball, David M.; Sumsion, Alton E.; and Taylor, Zane S., 4,486,230, Cl. 75-96.000.
United States Surgical Corporation: *See—*
Swiggett, Brian E., 4,485,817, Cl. 128-334.00R.
United Stirling AB: *See—*
Almstrom, Sten-Hakan, 4,485,627, Cl. 60-641.140.
United Technologies Corporation: *See—*
Koenig, Robert J.; and Stevens, Leonard W., 4,485,620, Cl. 60-39.750.
United Technologies Diesel Systems, Inc.: *See—*
Kimberley, John A.; and Bullis, Robert H., 4,485,794, Cl. 123-569.000.
Universal Filters, Inc.: *See—*
Rosaen, Lars O., 4,485,672, Cl. 73-273.000.
Universal Instruments Corporation: *See—*
Janisiewicz, Stanley, 4,485,548, Cl. 29-566.300.
Universal Spiralweld Enterprises, Inc.: *See—*
Smith, Richard H., Sr., 4,485,756, Cl. 114-65.00R.
University of Akron: *See—*
Kennedy, Joseph P., 4,486,572, Cl. 525-283.000.
University of British Columbia, Canada: *See—*
Parsons, Robert R.; McMahon, Richard; and Thewalt, Michael L., 4,486,289, Cl. 204-298.000.
University of Utah: *See—*
Miller, Jan D.; and Misra, Manoranjan, 4,486,294, Cl. 208-11.0LE.
University Patents, Inc.: *See—*
Bier, Milan, 4,486,282, Cl. 204-180.00P.
UOP Inc.: *See—*
Imai, Tamotsu; and Hung, Chi-wen, 4,486,547, Cl. 502-223.000.
Kulprathipanja, Santi, 4,486,548, Cl. 502-404.000.
Kulprathipanja, Santi; and Neuzil, Richard W., 4,486,618, Cl. 585-829.000.
Upjohn Company, The: *See—*
Aristoff, Paul A., 4,486,598, Cl. 562-466.000.
Lin, Chiu-Hong, 4,486,593, Cl. 546-335.000.
Uraneck, Carl A.; and Burleigh, John E., to Phillips Petroleum Company. Rubbery conjugated diene polymers terminated with hydrocarbyl phosphites. 4,485,833, Cl. 152-209.00R.
Urbanic, Robert F., to PMC Industries, Inc. Die head with different axial tool paths. 4,485,511, Cl. 10-96.00T.
Ursvikens Mekaniska Verkstads Aktiebolag: *See—*
Eriksson, Egon A. L., 4,485,714, Cl. 83-698.000.
Usami, Jun; and Yamada, Hiroshi, to NGK Insulators, Ltd. Combustion control apparatus of a combustion furnace. 4,486,165, Cl. 431-76.000.
USM Corporation: *See—*
Flanders, James R.; Newton, Robert A.; and Berrill, William H., 4,485,512, Cl. 12-12.500.
Tadmor, Zehev, 4,486,099, Cl. 366-99.000.
UTI Corporation: *See—*
Schafer, Robert H.; and Bosshard, Andreas, 4,486,726, Cl. 333-260.000.
Vahldiek, Ernst: *See—*
Forster, Hilmar; Vahldiek, Ernst; and Arbab, Dildar, 4,485,931, Cl. 213-4.000.
Valco Cincinnati, Inc.: *See—*
Santefort, Richard A.; and Neckel, Edmund, 4,486,001, Cl. 251-61.300.
Valeo: *See—*
Villata, Gino; and Herbulot, Jean, 4,485,896, Cl. 188-72.500.
Vallo, Ferenc: *See—*
Baksa, Gyorgy; Boros, Jozsef; Horvath, Gyula; Ihasz, Balazs; Pais, Zoltan; Rainiss, Matyas; Sitkei, Ferenc; Solymar, Karoly; Toth, Bela; Vallo, Ferenc; Voros, Istvan; Orban nee Kelemen, Maria; and Zoldi, Jozsef, 4,486,393, Cl. 423-121.000.
Vallourec: *See—*
Douchy, Michel; Tranchant, Jean-Louis; and Jehan, Michel, 4,486,227, Cl. 75-53.000.
Valmet OY: *See—*
Riihinen, Jaakko, 4,485,540, Cl. 29-116.0AD.
Valtanen, Kalevi: *See—*
Kuusinen, Osmo; Rantanen, Mikko; Rintanen, Olavi; Pajunen, Reijo; Oittinen, Pekka; and Valtanen, Kalevi, 4,486,647, Cl. 219-137.0WM.
Vander Kaay, Henry A.; and Rosaen, Borje O., to Rosaen, Borje O.; and Rosedale Product, Inc. Back pressure inducer. 4,485,844, Cl. 137-515.700.
VanderKooi, David L.: *See—*
Flamboe, Donald R., Jr.; and VanderKooi, David L., 4,485,602, Cl. 52-239.000.
Vander Syde, Gary L., to Bell & Howell Company. Adaptive vacuum cup mechanism. 4,486,013, Cl. 271-107.000.
van der Weide, Jouke, to Robert Bosch GmbH. Method for supplying an internal combustion engine with liquefied petroleum gas and apparatus for performing the method. 4,485,792, Cl. 123-527.000.
Vaniglia, Christopher L.: *See—*
Taylor, Ralph C., Jr.; and Vaniglia, Christopher L., 4,486,830, Cl. 364-146.000.
Van Iperen, Willem H. P., to Sea-Land Industries, Inc. Nailing tool. 4,485,956, Cl. 227-147.000.
Van Loghem, Johannes J.; and La Grouw, Johannes. Building planks and apparatus for making the same. 4,485,538, Cl. 29-33.00K.
Van Ryswyk, Henricus J. Method of making articles comprising two components hinged one to the other. 4,485,544, Cl. 29-417.000.
Van Saun, William A.; and Roush, David M., to FMC Corporation. Cyclohexadiene carboxylate insecticide intermediates. 4,486,588, Cl. 544-172.000.
Varian Associates, Inc.: *See—*
Muka, Richard S.; and Russo, Carl J., 4,486,652, Cl. 219-553.000.
Vasilakes, Lloyd S.: *See—*
Trine, Richard D.; and Vasilakes, Lloyd S., 4,486,619, Cl. 174-34.000.
Vasoll, Walter J., to Dresser Industries, Inc. Seal placement and removal press for rotating machinery. 4,485,542, Cl. 29-252.000.
Vaughn, Howard A., Jr., to General Electric Company. Silicone resin coating composition. 4,486,503, Cl. 428-412.000.
Veb Kombinat Textima: *See—*
Berger, Johannes; Blechschmidt, Wolfgang; and Wolff, Christian, 4,485,571, Cl. 38-14.000.
VEB Werk fur Fernsehelektronik im VEB Kombinat Mikroelektronik: *See—*
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Verret, Willie M. Pneumatic fluid densiometer. 4,485,675, Cl. 73-439.000.
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Gorbacheva, Irina N.; Sukhova, Ljudmila M.; Kozinda, Zinaida J.; Molokov, Vladislav L.; Antonov, Lev T.; Simonov, Vadim D.; Chertov, Viktor A.; Dvoskin, Semen I.; and Veseneva, Raisa S., 4,486,347, Cl. 534-797.000.
Vezirian, Edward; Ouinones, Richard J.; and Lockstedt, Alan W., to Smith International, Inc. Composite bearing. 4,486,104, Cl. 384-95.000.
Victor Company of Japan, Ltd.: *See—*
Hirota, Akira; and Ota, Yoshihiko, 4,486,789, Cl. 358-330.000.
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Machida, Toyotaka; Noda, Terusaki; and Ikemura, Yuichi, 4,486,771, Cl. 358-29.000.
Sugiyama, Hiroyuki; Abe, Ryozo; and Sakakibara, Susumu, 4,486,790, Cl. 358-342.000.
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Vidal, Antonio: *See—*
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Villata, Gino; and Herbulot, Jean, to Valeo. Multi-disc brake. 4,485,896, Cl. 188-72.500.
Vitez, Gyorgy: *See*—
Adonyi, Ivan; Farkas, Endre; Hegedus, Gyula; Kormendy, Attila; Mogyorosi, Istvanne ; Molnar, Geza; Sass, Szilard; Scholler, Laszlo ; Takacs, Lajos; and Vitez, Gyorgy, 4,486,825, Cl. 364-200.000.
Vivares, Alain, to Ranco Incorporated. Tumbler dryer for the drying of laundry. 4,485,566, Cl. 34-44.000.
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Wiesinger, Horst; Holleis, Gunter; Scheurecker, Werner; and Antonitsch, Walter, 4,485,837, Cl. 164-448.000.
Voigt, Lothar A. Device for automatically cleaning manhole rims. 4,485,517, Cl. 15-246.500.
von Raven, Axel; Buckl, Hans; and Kroner, Ulrich. Method for the processing of fecal waste. 4,486,216, Cl. 71-8.000.
Vorbrodt, Hans-Matthias: *See*—
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Emanuel, Nikolai M.; Shvedova, Anna A.; Smirnov, Leonid D.; Spirina, Larina V.; and Katsnelson, Lev A., 4,486,440, Cl. 424-263.000.
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Green, Peter C.; and Block, Jacob, 4,486,318, Cl. 252-8.50A.
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Wilkie, Robert R.; and Cook, Charles S., 4,486,164, Cl. 425-525.000.
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Eigner, Erich, 4,485,975, Cl. 241-182.000.
Waber, Glenn R.: *See*—
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Wada, Shunichi, to Mitsubishi Denki Kabushiki Kaisha. Flow velocity measuring apparatus. 4,485,680, Cl. 73-861.220.
Wada, Tomio: *See*—
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Wada, Tsuneo: *See*—
Murata, Hideki; Terada, Sadatugu; Tamaki, Kiyoshi; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, 4,486,559, Cl. 523-468.000.
Wada, Yoshiyo; Kinjo, Hisao; Ueno, Ichiro; Honjo, Yoshihiko; Tatsuguchi, Kazuo; and Shikunami, Juichi, to Victor Company of Japan, Ltd. Apparatus for optically reproducing signals recorded on a rotating recording medium. 4,486,791, Cl. 358-342.000.
Wagener, Klaus: *See*—
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Walinsky, Stanley W., to Pfizer Inc. Use of fumaric acid polymers as antiscalants. 4,486,581, Cl. 526-271.000.
Walker, Donald F., to Hughes Aircraft Company. Digital system for raster scan display of video and alpha-numerics with single bit map memory. 4,486,746, Cl. 340-750.000.
Walker, Neil J.; and Connolly, Philip B., to New Zealand Milk Products, Inc. Protein isolates and method of producing them. 4,486,343, Cl. 260-112.00G.
Walker, Robert H.: *See*—
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Wallner, Peter; and Lindenmann, Alois, to Schurter AG. Fuse holder, especially fuse holder for miniaturized fuses. 4,486,067, Cl. 339-218.00R.
Walter, Richard P.; and Taplin, Lael B., to Bendix Corporation, The. Fuel injector with inner chamber vacuum. 4,485,789, Cl. 123-467.000.
Walulik, James J., to Schlumberger Technology Corporation. Method and apparatus for conducting wireline operations in a borehole. 4,485,870, Cl. 166-250.000.
Wang, Chia-Lin J.: *See*—
Patel, Narayan G.; and Wang, Chia-Lin J., 4,486,445, Cl. 424-279.000.
Warchol, Joseph F., to E. F. Houghton & Co. Polyoxazolines in aqueous quenchants. 4,486,246, Cl. 148-18.000.
Ward, Albert W.: *See*—
Peugh, Herbert V.; and Ward, Albert W., 4,485,758, Cl. 118-52.000.
Ward, Bennie R.; and Ashton, Richard F., to Reynolds Metals Company. Method for producing superplastic aluminum alloys. 4,486,242, Cl. 148-11.50A.
Ward, Bennie R.; Agrawal, Suphal P.; and Ashton, Richard F., to Reynolds Metals Company. Method of producing superplastic aluminum sheet. 4,486,244, Cl. 148-12.70A.
Ward, Brian L., to Allegheny Ludlum Steel Corporation. Rapidly cast alloy strip having dissimilar portions. 4,485,839, Cl. 164-463.000.
Warhol, Nicholas, to Minnesota Mining and Manufacturing Company. Copy machine with unauthorized copy prevention. 4,486,090, Cl. 355-3.00R.
Washington Rotating Control Heads, Inc.: *See*—
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Watanabe, Hiroshi: *See*—
Abe, Yoshiaki; and Watanabe, Hiroshi, 4,486,406, Cl. 424-70.000.
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; and Mori, Toshihito, to Kowa Company, Ltd. 2'-Deamino aminoglycosides and composition thereof. 4,486,418, Cl. 424-180.000.
Watanabe, Kazuo: *See*—
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kume, Toshiaki; and Kakimura, Toshihide, 4,485,750, Cl. 112-158.00E.
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Watkins, Dwight G.: *See*—
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Watson, John C.; and Chan, Bing G., to Northern Telecom Limited. Overload protector for a telephone set. 4,486,804, Cl. 361-104.000.
Wattenhofer, Jean P., to E.T.A., S.A. Fabriques d'Ebauches. Watch provided with a microcomputer. 4,486,847, Cl. 364-705.000.
Wauer, Dieter: *See*—
Wagner, Gerald; and Wauer, Dieter, 4,486,082, Cl. 354-6.000.
Webb, David, to Bush Boake Allen Limited. Process for the production of phenyl substituted propanal. 4,486,607, Cl. 568-425.000.
Weber, Harold J. Frequency dependent pulsed gain modulated metallic object detector. 4,486,712, Cl. 324-329.000.
Weber, Rudolf; and Riedel, Horst, to Krupp Polysius AG. Apparatus for extracting and analysing dust-laden gas samples. 4,485,684, Cl. 73-863.120.
Weber, Werner: *See*—
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Wehner, Wolfgang; and Ackermann, Peter, to Ciga-Geigy Corporation. Trioxganotin hydantoin compounds, and the use thereof for combating insects and acarids. 4,486,424, Cl. 424-245.000.
Weiler, Walter, to Passavant-Werke AG & Co. KG. Filter apparatus having filter bed back-washing means. 4,486,307, Cl. 210-275.000.
Weiner, Hans: *See*—
Hofbauer, August; Steinbeck, Herbert; and Weiner, Hans, 4,485,788, Cl. 123-452.000.
Weinert, Wolfgang, to Blendax-Werke R. Schneider GmbH & Co. Tooth and mouth care agents. 4,486,404, Cl. 424-54.000.
Weinstein, Morris; and Lillis, Lorraine, to Millmaster Onyx Group Inc. Laundering compositions. 4,486,195, Cl. 8-137.000.
Weir, Thomas J.: *See*—
Nilson, Carl A.; and Weir, Thomas J., 4,485,656, Cl. 72-84.000.
Weis, Charles W., to Power-Line Fastener Systems, Inc. Shiftable magazine clip feed for fastener driving tools. 4,485,952, Cl. 227-7.000.
Weiser, Atilla: *See*—
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Wells, Alton R.: *See*—
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Wells Lamont Corporation: *See*—
Smith, Jasper N., 4,485,917, Cl. 206-278.000.
Wells, Robert M.; and Wells, Alton R. Ambient compensated motor protector. 4,486,732, Cl. 337-100.000.
Welsch, John H.; and McLean, Bernard D., to Metropolitan Wire Corporation. Shock absorbing caster provided with an elastomeric member to prevent water collection therein. 4,485,521, Cl. 16-44.000.

Wentzell, Timothy H., to Combustion Engineering, Inc. Compression sleeve tube repair. 4,485,847, Cl. 138-89.000.

Werner, Gunnar A. A.: *See*—
Sutton, Philip J.; Lyon, Byron W.; and Werner, Gunnar A. A., 4,485,762, Cl. 119-14.170.

Wesch, Ludwig, to Odenwald-chemie GmbH. Fire-retardant composition and method for producing fire-resistant layers. 4,486,553, Cl. 523-179.000.

Wesemeyer, Jurgen: *See*—
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Wesselski, Willi: *See*—
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Westcott, Vernon C., to Sensormatic Electronics Corporation. Coil assembly with flux directing means. 4,486,731, Cl. 336-212.000.

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Icking, Friedrich, 4,485,763, Cl. 119-14.170.
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Westhoff, William L.: *See*—
Posiviata, Richard W.; Kemper, Dennis; and Westhoff, William L., 4,486,183, Cl. 474-94.000.

Westinghouse Electric Corp.: *See*—
Calvino, Ben J., 4,486,633, Cl. 200-148.00R.
Cooper, Glenn D., 4,486,024, Cl. 277-3.000.
de Calvino y Teijeiro, B. J., 4,486,635, Cl. 200-148.00A.
Ecer, Gunes M.; Wood, Susan; and Schreurs, Jan J., 4,486,247, Cl. 148-31.500.
Fromson, Robert E.; Skutch, Maria E.; Nunamaker, Charles S.; and Scheda, Francis A., 4,486,279, Cl. 204-129.500.
Kemeny, George A., 4,485,720, Cl. 89-8.000.
Mendelsohn, Morris A.; Navish, Francis W., Jr.; and Rudd, George E., 4,485,719, Cl. 89-1.816.
Nelson, Robert L.; and Stough, Donald M., 4,486,166, Cl. 431-76.000.
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Westvaco Corporation: *See*—
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Wheatley, Nigel J.; and Andrews, Martyn P., to Plessey Overseas Limited. Multi-programming data processing system process suspension. 4,486,831, Cl. 364-200.000.

Whirlpool Corporation: *See*—
Mulder, James R.; Pielemeier, John W.; and Snider, Joel M., 4,485,645, Cl. 68-18.00F.

White, Allen A. Material chopping apparatus. 4,485,976, Cl. 241-186.200.

White, Donald A.: *See*—
Michaelson, Robert C.; Austin, Richard G.; and White, Donald A., 4,486,613, Cl. 568-860.000.

White, Jonathan C., to AT&T Bell Laboratories. Tunable anti-Stokes Raman laser. 4,486,884, Cl. 372-3.000.

White, Timothy T. Adjustable connector assembly. 4,486,134, Cl. 411-103.000.

Whitney, Michael L.; Blakley, William G.; and Blakley, Larry W. Undercarriage airstream deflector assembly for truck trailers and the like. 4,486,046, Cl. 296-1.00S.

Whittaker, Norman: *See*—
Caldwell, Albert G.; and Whittaker, Norman, 4,486,443, Cl. 424-273.00R.

Widmer, Albert X.: *See*—
Franaszek, Peter A.; and Widmer, Albert X., 4,486,739, Cl. 340-347.0DD.

Wiener, Murray, to Babcock & Wilcox Company, The. Solar receiver with interspersed panels. 4,485,803, Cl. 126-422.000.

Wiesenberger, Alfred; Kolb, Erich; and Engelhardt, Iris, to Peter Eckes, Firma. Protein containing conditioning drink. 4,486,413, Cl. 424-177.000.

Wiesinger, Horst; Holleis, Gunter; Scheurecker, Werner; and Antonitsch, Walter, to Voest-Alpine Aktiengesellschaft. Supporting and guiding arc for a cast strand. 4,485,837, Cl. 164-448.000.

Wild, Gene M.: *See*—
Baltz, Richard H.; Wild, Gene M.; and Seno, Eugene T., 4,486,584, Cl. 536-7.100.

Wilhelm Hegenscheidt GmbH: *See*—
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Wilkes, Alan: *See*—
Kesselman, Jerome; Shelnut, James; and Wilkes, Alan, 4,486,518, Cl. 430-5.000.

Wilkie, Robert R.; and Cook, Charles S., to W. R. Grace & Co., Cryovac Div. Blow mold. 4,486,164, Cl. 425-525.000.

Wilkie, Robert R.; and Cooke, Charles S., to W. R. Grace & Co., Cryovac Div. Process for forming an integral hinged single wall blow molded container. 4,486,379, Cl. 264-526.000.

Willcox, Frederick P. Ribbon guiding and directing structure and cartridge. 4,486,107, Cl. 400-208.000.

William H. Rorer, Inc.: *See*—
Klein, Robert W., 4,486,405, Cl. 424-59.000.
Studt, William L.; Kuhla, Donald E.; Chou, Billy J.; and Yelnosky, John, 4,486,439, Cl. 424-263.000.

Williams, Clarence O. Pile fabric creel having fold-up end assemblies. 4,485,984, Cl. 242-77.100.

Williams, Marvin D. Tamperproof pill dispensing apparatus. 4,485,938, Cl. 221-154.000.

Williamson, Roger J.: *See*—
Pitt, Gillies D.; Williamson, Roger J.; Batchelder, David N.; and Prabakaran, Arulanandam M., 4,485,679, Cl. 73-861.220.

Willing, David N.: *See*—
Pape, Peter G.; and Willing, David N., 4,486,336, Cl. 252-321.000.

Wilmer, Michael E.; Green, Leland D.; and Tietze, Rudiger W., to Xerox Corporation. Video signal white level corrector. 4,486,781, Cl. 358-163.000.

Wilson Industries, Inc.: *See*—
Sharp, Harper E.; Linn, John W., III; Macha, Emil S.; and Smither, Miles A., 4,485,563, Cl. 33-314.000.

Wilson, James S., to Dresser Industries, Inc. Movement support bracket for a pressure gange. 4,485,676, Cl. 73-741.000.

Wilson, Robert C., Jr.: *See*—
Oleck, Stephen M.; and Wilson, Robert C., Jr., 4,486,296, Cl. 208-111.000.

Wilson, Susan L.: *See*—
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Winkler, Gert: *See*—
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Winkler, Otto, to Balzers Aktiengesellschaft. Method and apparatus for rapidly regenerating a self-contained cryopump. 4,485,631, Cl. 62-55.500.

Winkler, Wolfgang: *See*—
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Witte, Johan F.; and Horsmans, Jan W. L. M., to Goudsche Machinefabriek B.V. Continuously working crystallizer. 4,486,395, Cl. 422-254.000.

Wittes, James M. Strain-relief electrical cable connector. 4,486,065, Cl. 339-103.00B.

Witty, Robert W.: *See*—
Ackert, Robert J.; Witty, Robert W.; and Crozier, Peter A., 4,486,248, Cl. 148-145.000.

Wohler, Jurgen: *See*—
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Wojciechowski, Francis E.: *See*—
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Wolf, Erich; and Deininger, Rolf, to Chimicasa GmbH. Water-soluble sweetening tablets. 4,486,455, Cl. 426-548.000.

Wolff, Christian: *See*—
Berger, Johannes; Blechschmidt, Wolfgang; and Wolff, Christian, 4,485,571, Cl. 38-14.000.

Wolff, Kenneth T.; Samson, Joseph E.; and Baty, Kurt F., to Stratus Computer, Inc. Computer peripheral control apparatus. 4,486,826, Cl. 364-200.000.

Wolff, Rene : *See*—
Anglaret, Gilbert; Wolff, Rene ; and Audibert, Alain, 4,485,994, Cl. 248-65.000.

Wolff, Robert C. Variable pressure relief and control valve. 4,485,843, Cl. 137-514.000.

Wollnik, Hermann. Arrangement and process for adjusting imaging systems. 4,486,664, Cl. 250-396.00R.

Wong, Franklin S.: *See*—
Hildebrand, Clair E.; and Wong, Franklin S., 4,486,226, Cl. 75-11.000.

Wong, Victor W.; and Mogaka, Zablon N., to Cummins Engine Company, Inc. System and method for reducing particulate emissions from internal combustion engines. 4,485,621, Cl. 60-274.000.

Wood, James A.: *See*—
Mazur, Richard J.; and Wood, James A., 4,486,839, Cl. 364-426.000.

Wood, Susan: *See*—
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Woodings, Robert T. Method of making class D sucker rods. 4,486,249, Cl. 148-154.000.

Woodley, George M., to King Instrument Corporation. Cassette loading machine. 4,486,262, Cl. 156-502.000.

Woodward, Gary K., to General Motors Corporation. Isolated integrated circuit transistor with transient protection. 4,486,770, Cl. 357-46.000.

Workman, Michael L., to International Business Machines Corporation. Sliding mask variable resolution velocity trajectory for track following servo. 4,486,797, Cl. 360-78.000.

Worley, Arthur C.; and Becht, Charles, IV, to Exxon Research & Engineering Co. Conduction cooled tube supports. 4,485,766, Cl. 122-510.000.

Worrallo, Anthony C. Frame work joints. 4,485,597, Cl. 52-36.000.

Wright, Harvie R. C.: *See*—
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Wright, Kenneth N.: *See*—
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Wright, Richard R.: *See*—
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Wroblewski, Jerome J.: *See*—
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Wulff, Thomas J.: *See*—
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Wyber, Ronald J., to Commonwealth of Australia. Determination of system response. 4,486,862, Cl. 367-13.000.
Xerox Corporation: *See*—
Gebhart, Steven A.; and Parks, Randolph, 4,485,949, Cl. 226-2.000.
St. John, Robert P.; and Lloyd, William A., 4,485,982, Cl. 242-57.100.
Wilmer, Michael E.; Green, Leland D.; and Tietze, Rudiger W., 4,486,781, Cl. 358-163.000.
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XICOR, Inc.: *See*—
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Yabu, Yoshinori: *See*—
Kato, Shuichiro; Yabu, Yoshinori; and Kinoshita, Yoshihiro, 4,485,643, Cl. 62-519.000.
Yada, Yoshikuni: *See*—
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Yaindl, Charles, to McGraw-Edison Company. Side rod tensioning device for preventing misalignment and distortion during assembly of the plunger drive mechanism in a reciprocating pump. 4,486,005, Cl. 254-29.00A.
Yamada, Hiroshi: *See*—
Usami, Jun; and Yamada, Hiroshi, 4,486,165, Cl. 431-76.000.
Yamada, Katsuhisa: *See*—
Tanimoto, Isao; Yamada, Tsuneo; and Yamada, Katsuhisa, 4,486,510, Cl. 428-598.000.
Yamada, Mitsuhiko; and Tokura, Isao, to Dainippon Screen Seizo Kabushiki Kaisha. Method of identifying a multiplicity of special points. 4,485,964, Cl. 234-2.000.
Yamada, Mitsuhiko, to Dainippon Screen Seizo Kabushiki Kaisha. Method for producing a halftone plate for use in a picture reproducing machine. 4,486,788, Cl. 358-298.000.
Yamada, Tetsuo: *See*—
Okumoto, Tadaoki; Sugimoto, Masatoshi; Kawazoe, Takashi; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Funato, Kenichi, 4,486,480, Cl. 428-36.000.
Yamada, Tsuneo: *See*—
Tanimoto, Isao; Yamada, Tsuneo; and Yamada, Katsuhisa, 4,486,510, Cl. 428-598.000.
Yamada, Yutaka: *See*—
Fujisaki, Yasuyuki; Takahashi, Minoru; Ogawara, Hiroshi; Funaki, Hirozo; Seimaya, Ryubun; Yamada, Yutaka; Tomono, Makoto; and Tarumi, Noriyoshi, 4,486,524, Cl. 430-109.000.
Yamaguchi, Akiya; Stark, Marvin M.; and Soelberg, Kenneth B., to Sankin Industry Co., Ltd. Apparatus for diagnosing environmental tissue of tooth. 4,485,823, Cl. 128-739.000.
Yamaguchi, Shizuka: *See*—
Asahi, Naotatsu; Yamaguchi, Shizuka; Kojima, Yoshitaka; and Terakado, Katsuyoshi, 4,486,462, Cl. 427-39.000.
Yamaguchi, Tadanori, to Tektronix, Inc. Integrated circuit method. 4,486,266, Cl. 156-643.000.
Yamaguchi, Takashi: *See*—
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; and Mori, Toshihito, 4,486,418, Cl. 424-180.000.
Yamaguchi, Toshihiro: *See*—
Kishino, Takao; Funazaki, Tadashi; and Yamaguchi, Toshihiro, 4,486,749, Cl. 340-772.000.
Yamaguchi, Yasuyuki: *See*—
Kimoto, Teruo; Yamaguchi, Yasuyuki; Nishimura, Takeji; and Mizuno, Satoshi, 4,486,891, Cl. 377-24.000.
Yamamoto, Akiyoshi: *See*—
Shoji, Morio; and Yamamoto, Akiyoshi, 4,485,652, Cl. 72-19.000.
Yamamoto, Hiroshi; Motomura, Masaki; and Kawaguchi, Keisuke, to Nippon Steel Corporation. Method of measuring the normalized magnitude of ring opening in spiral pipe. 4,485,650, Cl. 72-12.000.
Yamamoto, Kozo: *See*—
Chibata, Ichiro; Tosa, Tetsuya; Sato, Tadashi; and Yamamoto, Kozo, 4,486,532, Cl. 435-145.000.
Yamamoto, Nobuyuki: *See*—
Naruo, Kyoichi; Yamamoto, Nobuyuki; and Okita, Tsutomu, 4,486,500, Cl. 428-336.000.
Yamamoto, Ryoji: *See*—
Iizuka, Kinji; Kamino, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, 4,486,597, Cl. 562-455.000.
Yamamoto, Sakuei; Inao, Hiroshi; Tokumitsu, Kiyonori; Nishida, Mitsuhiro; Ishikawa, Takatoshi; and Sakabe, Shigekazu, to Mitsubishi Denki Kabushiki Kaisha. Encased electric motor employing gas as heat dissipating means. 4,486,677, Cl. 310-64.000.
Yamamoto, Tadahiro: *See*—
Sugo, Yuko; Yamamoto, Tadahiro; Arai, Motomi; and Saito, Masaaki, 4,485,791, Cl. 123-478.000.
Yamamoto, Yujiro: *See*—
Kawamatsu, Yutaka; Fujita, Takeshi; and Yamamoto, Yujiro, 4,486,594, Cl. 548-183.000.
Yamamura, Tatsuo, to Fuji Electric Company, Ltd. Defect detecting apparatus and method. 4,486,777, Cl. 358-106.000.
Yamamuro, Toshikazu; Shiotsubo, Masami; and Saito, Hiroshi, to Kabushiki Kaisha Komatsu Seisakusho. Pipe laying method and apparatus. 4,486,124, Cl. 405-184.000.
Yamaoka, Toshihide, to Olympus Optical Company Limited. Multiple copying process with improved image retention. 4,486,525, Cl. 430-122.000.
Yamasaki, Toyosaka, to Nippon Electric Co., Ltd. Phase controlled oscillator including a phase lock loop and dual sweep oscillators. 4,486,717, Cl. 331-4.000.
Yamataka, Akihiro: *See*—
Harigaya, Isao; and Yamataka, Akihiro, 4,486,849, Cl. 364-715.000.
Yamauchi, Shinya: *See*—
Maruyama, Teruo; Yamauchi, Shinya; and Kagoroku, Nobuo, 4,486,158, Cl. 418-39.000.
Yanase, Takeyasu; and Amatsu, Masashi, to Fujitsu Limited. Magnetic-bubble memory device. 4,486,858, Cl. 365-39.000.
Yanez, Serge J. Non-lethal self defense device. 4,486,807, Cl. 361-232.000.
Yang, Ling: *See*—
Kaae, James L.; Gulden, Terry D.; and Yang, Ling, 4,486,473, Cl. 427-249.000.
Yanmar Diesel Engine Company Limited: *See*—
Nishimura, Takaaki; and Takase, Hatsuo, 4,485,790, Cl. 123-468.000.
Yanus, John F., to Xerox Corporation. Photoconductive devices containing novel squaraine compositions. 4,486,520, Cl. 430-59.000.
Yasuda, Mitsuo; Nishizawa, Toshizo; Yuchi, Kazuhide; Kawahira, Hiroto; and Nagatomo, Hideaki, to Mitsubishi Denki Kabushiki Kaisha. Control device for air conditioner for automobile. 4,485,634, Cl. 62-196.200.
Yeda Research and Development Co. Ltd.: *See*—
Bai, Dov; Brandt, Achi E.; and Sollish, Bruce D., 4,486,835, Cl. 364-414.000.
Yelnosky, John: *See*—
Studt, William L.; Kuhla, Donald E.; Chou, Billy J.; and Yelnosky, John, 4,486,439, Cl. 424-263.000.
Yokko, Masao: *See*—
Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, 4,485,776, Cl. 123-198.00F.
Yokoe, Shigeo: *See*—
Hara, Kenkichi; Yokoe, Shigeo; Oka, Kazuyoshi; Murakami, Tamotsu; and Hashimoto, Tsugifusa, 4,486,502, Cl. 428-405.000.
Yokono, Hitoshi: *See*—
Nakatani, Mitsuo; Matsuyama, Haruhiko; Okunaka, Masaaki; Yokono, Hitoshi; Isogai, Tokio; Saitoh, Tadashi; and Midorikawa, Sumiyuki, 4,486,232, Cl. 75-252.000.
Yokoya, Satoshi, to Sony Corporation. Amplitude limiter for AM broadcast transmitter. 4,486,898, Cl. 381-15.000.
Yoon, In B. One-piece compound elastic occluding member. 4,485,814, Cl. 128-327.000.
Yoshida, Akiyoshi; Kametaka, Shigeru; and Hayashi, Shin'ichi, to Rohto Pharmaceutical Co., Ltd. Cleaning composition for artificial dentures. 4,486,330, Cl. 252-174.120.
Yoshida, Hajime, to Hajime Industries, Ltd. Inspection apparatus. 4,486,776, Cl. 358-106.000.
Yoshida, Hiroshi; Akashi, Shunji; and Matsuda, Yoshio, to Yoshida Kogyo K. K. Separable slide fastener. 4,485,532, Cl. 24-381.000.
Yoshida Kogyo K. K.: *See*—
Yoshida, Hiroshi; Akashi, Shunji; and Matsuda, Yoshio, 4,485,532, Cl. 24-381.000.
Yoshida Kogyo K.K.: *See*—
Seki, Fumio, 4,485,541, Cl. 29-251.000.
Takeshima, Kiyoshi; and Nakada, Yoshinori, 4,485,533, Cl. 24-383.000.
Yoshida, Ryo: *See*—
Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, 4,486,223, Cl. 71-103.000.
Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, 4,486,604, Cl. 568-33.000.
Yoshida, Yukio; Tanaka, Akira; Fukumoto, Ryutaro; Akimoto, Ryosaku; Tanaka, Shigetoshi; and Ito, Nobuaki, to Mitsubishi Jukogyo Kabushiki Kaisha; and Churyo Engineering Co., Ltd. Control device for car-mounted air-conditioner. 4,485,863, Cl. 165-42.000.
Yoshimi, Akiro: *See*—
Kojima, Yasuhumi; Yoshimi, Akiro; Kamiya, Michihiko; Ootsuka, Fumio; and Matsushima, Takeo, 4,486,837, Cl. 364-424.000.
Young, Alastair J.: *See*—
Burke, John P.; and Young, Alastair J., 4,485,687, Cl. 74-358.000.
Young, Peter L., to Sperry Corporation. Method of making planarizing non-conductive layers employing conductive metals. 4,486,464, Cl. 427-63.000.
Young, Richard G., to Dow Chemical Company, The. Sequestering agent. 4,486,339, Cl. 252-546.000.
Yu, Mason K., to General Motors Corporation. Vehicle engine cooling apparatus. 4,485,888, Cl. 180-297.000.
Yuchi, Kazuhide: *See*—
Yasuda, Mitsuo; Nishizawa, Toshizo; Yuchi, Kazuhide; Kawahira, Hiroto; and Nagatomo, Hideaki, 4,485,634, Cl. 62-196.200.
Yuni, William, to Codex Corporation. First-in, first-out memory system. 4,486,854, Cl. 364-900.000.
Zackay, Victor F.: *See*—
Stuck, Earl N.; and Zackay, Victor F., 4,486,470, Cl. 427-196.000.
Zahnd, Andreas: *See*—
Gertsch, Peter; Imhof, Robert; and Zahnd, Andreas, 4,485,738, Cl. 101-365.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; and Kondo, Shinichi, 4,486,419, Cl. 424-180.000.
Zajec, Joze: *See*—
Piesen, Stephan; and Zajec, Joze, 4,485,612, Cl. 53-504.000.
Zambon S.p.A.: *See*—
Giordano, Claudio; Minisci, Francesco; Meneghin, Mariano; and Perdoncin, Giulio, 4,486,352, Cl. 260-397.100.
Meneghin, Mariano; Piccinelli, Piero; and Giordano, Claudio, 4,486,599, Cl. 562-469.000.

Zampini, Anthony: *See*—
Malon, Raymond F.; and Zampini, Anthony, 4,486,202, Cl. 55-158.000.

Zaschke, Horst: *See*—
Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Matthias; and Deresh, Sylvia, 4,486,332, Cl. 252-299.610.

Zeitlin, Robert J.: *See*—
Machonis, John, Jr.; Schmukler, Seymour; Zeitlin, Robert J.; and Shida, Mitsuzo, 4,486,469, Cl. 427-195.000.

Zengel, Hans; and Bergfeld, Manfred, to Akzona Incorporated. Preparation of trans cyclohexane 1,4-diamine. 4,486,603, Cl. 564-461.000.

Zenith Electronics Corporation: *See*—
Bretl, Wayne E.; and Mycynek, Victor G., 4,486,782, Cl. 358-197.000.

Zettler, Hans D.: *See*—
Thiele, Heino; Weber, Werner; Zettler, Hans D.; Schlueter, Klaus; Wallner, Josef; and Seid, Bernhard, 4,486,102, Cl. 366-182.000.

Zieders, Glenn W.: *See*—
Hoag, Ethan D.; and Zieders, Glenn W., 4,486,887, Cl. 372-58.000.

Ziegenhorn, Joachim; Bartl, Knut; and Brandhuber, Max, to Boehringer Mannheim GmbH. Method and reagent for the determination of β-lipoprotein. 4,486,531, Cl. 435-19.000.

Ziegler, Gerhard: *See*—
Hieber, Ernst; Kaden, Hans-Dieter; Martini, Helmut; and Ziegler, Gerhard, 4,486,173, Cl. 432-205.000.

Ziliotto, Alberto, to La Plastiveneta S.p.A. Insulated cloth for industrial and civil covering applications. 4,486,492, Cl. 428-252.000.

Zilog, Inc.: *See*—
Shima, Masatoshi; Faggin, Federico; and Ungermann, Ralph K., 4,486,827, Cl. 364-200.000.

Zingel, Heinz: *See*—
Koller, Hans; and Zingel, Heinz, 4,486,261, Cl. 156-461.000.

Zinimon, Oliver. Heat-activated patch or repair composition and system for metal. 4,486,254, Cl. 156-94.000.

Zogno, Mario: *See*—
Rolando, Walter; Da Giau, Asco; and Zogno, Mario, 4,485,503, Cl. 4-622.000.

Zoldi, Jozsef: *See*—
Baksa, Gyorgy; Boros, Jozsef; Horvath, Gyula; Ihasz, Balazs; Pais, Zoltan; Rainiss, Matyas; Sitkei, Ferenc; Solymar, Karoly; Toth, Bela; Vallo, Ferenc; Voros, Istvan; Orban nee Kelemen, Maria; and Zoldi, Jozsef, 4,486,393, Cl. 423-121.000.

Zsupan, Kalman: *See*—
Brendel nee Hajnoczki, Marta; Gulyas, Imre; Gyoker, Istvan; Zsupan, Kalman; Csorvassy, Istvan; Salamon, Zoltan; Somogyi, Gabor; Szentkiralyi, Istvan; Timar, Tibor; Biro nee Czapary, Eva; Fodor, Istvan; and Repasi, Janos, 4,486,359, Cl. 260-502.50F.

Zuercher, Joseph C.: *See*—
Christian, Raymond R.; Sue, Harry; Waggener, Herbert A.; and Zuercher, Joseph C., 4,485,553, Cl. 29-589.000.

Zugelter, Frank L.: *See*—
Swan, William C.; and Kastan, Howard, 4,485,702, Cl. 81-98.000.

Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, to Ciba-Geigy Corporation. 2,3-Dihydro-1-benzoxepine-4,5-dicarboxylic acid anhydrides. 4,486,596, Cl. 549-239.000.

Zylstra, Henry J., to Square D Company. Electronic system for high amperage circuit interruption apparatus. 4,486,803, Cl. 361-95.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF DECEMBER, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Crehan, Patrick J.: *See*—
Kennedy, Richard B., Re. 31,757, Cl. 521-103.000.

Fricke, Richard J.: *See*—
Kennedy, Richard B., Re. 31,757, Cl. 521-103.000.

Gagliani, John; and Long, John V. Modified polyimide foams and methods of making same. Re. 31,756, Cl. 521-56.000.

Gilmore, Cecilia: *See*—
Miller, Donald E.; and Gilmore, Cecilia, Re. 31,754, Cl. 426-602.000.

Hakoi, Tsutomu, to Yoshida Kogyo K. K. Apparatus for loading a pull tab on a slider body. Re. 31,751, Cl. 29-766.000.

Halse, Per W., to Moore Business Forms, Inc. Continuous stationery assemblies. Re. 31,752, Cl. 282-11.50A.

Kennedy, Richard B., to Crehan, Patrick J.; and Fricke, Richard J., part interest to each. Composition and a method for controlling reaction pressures during the foaming process resulting in an easily flame retarded foam-in place insulation. Re. 31,757, Cl. 521-103.000.

LaVergne, Joseph M., Jr., to LaVergne, Joseph M., Sr. Method of hollow article casting. Re. 31,753, Cl. 264-250.000.

LaVergne, Joseph M., Sr.: *See*—
LaVergne, Joseph M., Jr., Re. 31,753, Cl. 264-250.000.

Long, John V.: *See*—
Gagliani, John; and Long, John V., Re. 31,756, Cl. 521-56.000.

Miller, Donald E.; and Gilmore, Cecilia, to SCM Corporation. Low-fat comestible spread substitutes. Re. 31,754, Cl. 426-602.000.

Moore Business Forms, Inc.: *See*—
Halse, Per W., Re. 31,752, Cl. 282-11.50A.

Nilssen, Ole K. High efficiency push-pull inverters. Re. 31,758, Cl. 331-113.00A.

Robert Bosch GmbH: *See*—
Wanner, Karl; and Voss, Klaus, Re. 31,755, Cl. 464-167.000.

SCM Corporation: *See*—
Miller, Donald E.; and Gilmore, Cecilia, Re. 31,754, Cl. 426-602.000.

Voss, Klaus: *See*—
Wanner, Karl; and Voss, Klaus, Re. 31,755, Cl. 464-167.000.

Wanner, Karl; and Voss, Klaus, to Robert Bosch GmbH. Tool and chuck for hammer drill. Re. 31,755, Cl. 464-167.000.

Yoshida Kogyo K. K.: *See*—
Hakoi, Tsutomu, Re. 31,751, Cl. 29-766.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Brooks, William R., to Insta-Foam Products, Inc. Mixing and dispensing gun having a replaceable nozzle. B1 3,784,110, 12-4-84, Cl. 239-304.000.

Foults, Jonathan A., to Scovill Manufacturing Company. Fastener attaching machine having means for orienting caps, buttons, and the like. B1 4,019,666, 12-4-84, Cl. 227-119.000.

Insta-Foam Products, Inc.: *See*—
Brooks, William R., B1 3,784,110, Cl. 239-304.000.

Jooste, Abraham S. Irrigation sprinklers. B1 3,815,831, 12-4-84, Cl. 239-498.000.

Marietta, James W., Jr. Casing clip. B1 3,541,647, 12-4-84, Cl. 24-30.50W.

Medline Industries, Inc.: *See*—
Mills, James S., B1 4,301,206, Cl. 428-193.000.

Mills, James S., to Medline Industries, Inc. Surgical wrapper. B1 4,301,206, 12-4-84, Cl. 428-193.000.

Niedecker, Herbert. Sealing clamp. B1 3,473,430, 12-4-84, Cl. 411-172.000.

Scovill Manufacturing Company: *See*—
Foults, Jonathan A., B1 4,019,666, Cl. 227-119.000.

LIST OF DESIGN PATENTEES

Ackeret, Peter, to IDN Inventions and Development of Novelties. Container for tape cassettes. 276,574, 12-4-84, Cl. D6-407.000.

Acufex Microsurgical Inc.: *See*—
Honkanen, George P.; Strahan, John C.; and Lichtman, Philip R., 276,649, Cl. D24-8.000.

Aktiebolaget Draco: *See*—
Snellman-Wasenius, Kaija A.; and Virtanen, Risto, 276,654, Cl. D24-62.000.

Allsop, Inc.: *See*—
Clausen, Eivind; and Allsop, James D., 276,607, Cl. D14-11.000.
Clausen, Eivind; and Allsop, James D., 276,608, Cl. D14-11.000.

Allsop, James D.: *See*—
Clausen, Eivind; and Allsop, James D., 276,607, Cl. D14-11.000.
Clausen, Eivind; and Allsop, James D., 276,608, Cl. D14-11.000.

American Cyanamid Co.: *See*—
Harris, Ned, 276,597, Cl. D9-435.000.

American Home Products Corporation: *See*—
Ronayne, Walter M., 276,646, Cl. D23-69.000.

Anso Zimmermann Isolierflashen: *See*—
Zimmermann, Anso, 276,584, Cl. D7-317.000.

Auto Alloys R&D Limited: *See*—
Tutton, William G. G., 276,615, Cl. D15-126.000.

Automatic Vending, Inc.: *See*—
Ducker, Fred C.; and Rhodes, Steve C., 276,627, Cl. D20-1.000.

B. Dixon-Bate Limited: *See*—
Dixon-Bate, Barry, 276,602, Cl. D12-162.000.

Bagwell, Connice W. Sealing cap for a beverage bottle. 276,598, 12-4-84, Cl. D9-443.000.

Ballone, Michael P.: *See*—
La Police, George D.; and Ballone, Michael P., 276,614, Cl. D15-69.000.

Bethea, Christopher. Canteen case. 276,572, 12-4-84, Cl. D2-400.000.

Black, William R. Police gripper. 276,570, 12-4-84, Cl. D2-360.000.

Boros, Janos, to Plasztolus Muanyagfeldolgozo es Jatekkeszito ISz. Soccer game board. 276,629, 12-4-84, Cl. D21-27.000.

Breidert, George M., to G. C. Breidert Company, The. Roof exhauster. 276,647, 12-4-84, Cl. D23-153.000.

Cafazzo, Michael L. Hair color comparison device. 276,661, 12-4-84, Cl. D28-20.000.

Canon Kabushiki Kaisha: *See*—
Kikuchi, Nobuo; and Odagawa, Kazuyoshi, 276,625, Cl. D18-7.000.

Chajet, Clive, to Plough, Inc. Combined bottle and cap. 276,593, 12-4-84, Cl. D9-386.000.

Clausen, Eivind; and Allsop, James D., to Allsop, Inc. Cleaning cartridge for a cassette cleaner for an audio or video player/recorder. 276,607, 12-4-84, Cl. D14-11.000.

Clausen, Eivind; and Allsop, James D., to Allsop, Inc. Wiper arm for cassette cleaner for an audio player/recorder. 276,608, 12-4-84, Cl. D14-11.000.

Cox, John A., to Liqui-Box Corporation. Plastic container for liquids. 276,592, 12-4-84, Cl. D9-383.000.

Dart Industries Inc.: *See—*
Fahey, William K.; and Wolff, Martin J., 276,594, Cl. D9-420.000.
Daugherty, Valerie, to Questor Corp. Toy goat. 276,635, 12-4-84, Cl. D21-148.000.
Daugherty, Valerie, to Questor Corp. Toy octopus. 276,638, 12-4-84, Cl. D21-157.000.
Daugherty, Valerie, to Questor Corp. Toy dog. 276,639, 12-4-84, Cl. D21-161.000.
Daugherty, Valerie, to Questor Corp. Toy elephant teether. 276,653, 12-4-84, Cl. D24-45.000.
Davis, Joseph J.: *See—*
Gordon, Marc J.; and Davis, Joseph J., 276,579, Cl. D6-408.000.
Designs for Vision, Inc.: *See—*
Feinbloom, Richard E., 276,623, Cl. D16-130.000.
Feinbloom, Richard E., 276,624, Cl. D16-130.000.
DiFede, John. Plastic bucket lid removal tool. 276,585, 12-4-84, Cl. D8-40.000.
Dixon-Bate, Barry, to B. Dixon-Bate Limited. Combined towing coupling and removable pin. 276,602, 12-4-84, Cl. D12-162.000.
Ducker, Fred C.; and Rhodes, Steve C., to Automatic Vending, Inc. Dispensing machine or the like. 276,627, 12-4-84, Cl. D20-1.000.
Duthu, Raymond H. Portable navigation light system for barges. 276,657, 12-4-84, Cl. D26-50.000.
Duwell, Michael J.: *See—*
Legler, John G.; Irelan, Edward A.; and Duwell, Michael J., 276,616, Cl. D15-127.000.
F.I.R. Rubinetterie S.p.A.: *See—*
Piesco, Nazzareno, 276,645, Cl. D23-25.000.
Fahey, William K.; and Wolff, Martin J., to Dart Industries Inc. Container for candy or the like. 276,594, 12-4-84, Cl. D9-420.000.
Fairchild, Dwight M. Pouch for storing electrical ties. 276,571, 12-4-84, Cl. D2-400.000.
Fambrough, David G. Holder and ground anchor unit for cylindrical fence posts. 276,588, 12-4-84, Cl. D8-373.000.
Feinbloom, Richard E., to Designs for Vision, Inc. Beam splitting adjustable optical coupler. 276,623, 12-4-84, Cl. D16-130.000.
Feinbloom, Richard E., to Designs for Vision, Inc. Fixed direct endoscopic optical coupler. 276,624, 12-4-84, Cl. D16-130.000.
Fischer, Michael, to Scholl, Inc. Adjustable scalp hypothermia cap. 276,651, 12-4-84, Cl. D24-43.000.
Fitch, Craig H. Flotable lounge chair or similar article. 276,577, 12-4-84, Cl. D6-361.000.
Frates, Paul S.: *See—*
Scholl, Charles H.; Petrecca, Peter J.; Frates, Paul S.; and Lewellen, Richard R., 276,617, Cl. D15-144.000.
Fujii, Takashi: *See—*
Takahashi, Akira; Higashihara, Tooru; Tsuburaya, Kazuyuki; and Fujii, Takashi, 276,611, Cl. D14-82.000.
G. C. Breidert Company, The: *See—*
Breidert, George M., 276,647, Cl. D23-153.000.
Gimbel, Bernard, to Video Turf Incorporated. Gambling machine. 276,630, 12-4-84, Cl. D21-37.000.
Glicksman, Emel J. Hair dryer. 276,660, 12-4-84, Cl. D28-15.000.
Gordon, Marc J.; and Davis, Joseph J., to RGG, Inc. Film dispenser. 276,579, 12-4-84, Cl. D6-408.000.
Green, David T.; Rawson, Paul O., Jr.; and Yagami, Richard H., to United States Surgical Corporation. Surgical clip applier. 276,650, 12-4-84, Cl. D24-27.000.
Guiguizian, Jacques, to Savin Corporation. Bottle. 276,591, 12-4-84, Cl. D9-341.000.
Habro, Bertil, to Roshamn Industri AB. Omnidirectional reflector. 276,659, 12-4-84, Cl. D26-118.000.
Hama Hamaphot KG Hanke & Thomas: *See—*
Hanke, Rudolph, 276,618, Cl. D16-17.000.
Hanke, Rudolph, 276,620, Cl. D16-44.000.
Hanke, Rudolph, 276,621, Cl. D16-45.000.
Hamilton Sorter Co., Inc.: *See—*
Kwiecinski, Alfred, 276,578, Cl. D14-114.000.
Hanke, Rudolph, to Hama Hamaphot KG Hanke & Thomas. Slide viewer with magnifier. 276,618, 12-4-84, Cl. D16-17.000.
Hanke, Rudolph, to Hama Hamaphot KG Hanke & Thomas. Shoulder support for photographic equipment. 276,620, 12-4-84, Cl. D16-44.000.
Hanke, Rudolph, to Hama Hamaphot KG Hanke & Thomas. Combined camera grip and tripod. 276,621, 12-4-84, Cl. D16-45.000.
Hanna, Arthur W. Detachable handle for paint cans or the like. 276,586, 12-4-84, Cl. D8-320.000.
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Baum, William H.: *See*—
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Carson, Hugh T.: *See*—
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149	4,485,658
302	4,485,659
313	4,485,660
332	4,485,661
347	4,485,663
380	4,485,662
386	4,485,664

CLASS 73

19	4,485,665
23	4,485,666
	4,485,667
40.5 A	4,485,668
167	4,485,669
179	4,485,670
187	4,485,671
273	4,485,672
304 C	4,485,673
432 R	4,485,674
439	4,485,675
660	4,485,678
741	4,485,676
761	4,485,677
861.22	4,485,679
	4,485,680
862.04	4,485,681
862.36	4,485,682
862.53	4,485,683
863.12	4,485,684

CLASS 74

103	4,485,685
331	4,485,686
358	4,485,687
473 R	4,485,688
477	4,485,689
609	4,485,690
687	4,485,691
745	4,485,692
836	4,485,693
850	4,485,694
869	4,485,695

CLASS 75

0.5 R	4,486,225
11	4,486,226
53	4,486,227
65 R	4,486,228
68 R	4,486,229
96	4,486,230
125	4,486,231
252	4,486,232

CLASS 81

9.5 A	4,485,696
57.11	4,485,698
57.2	4,485,697
59.1	4,485,699
62	4,485,700
64	4,485,701
98	4,485,702
483	4,485,703

CLASS 82

34 A	4,485,704

CLASS 83

39	4,485,705
42	4,485,706
82	4,485,707
277	4,485,708
324	4,485,709
346	4,485,710
425	4,485,711
451	4,485,712
543	4,485,713
698	4,485,714
875	4,485,715

CLASS 84

1.03	4,485,716
1.22	4,485,717

CLASS 89

1.14	4,485,718
1.816	4,485,719
8	4,485,720
15	4,485,721
43 R	4,485,722
163	4,485,723

CLASS 91

29	4,485,724
45	4,485,725
375 R	4,485,726

CLASS 92

13.2	4,485,727
178	4,485,728

CLASS 98

1.5	4,485,729
118	4,485,730

CLASS 99

453	4,485,731
549	4,485,732

CLASS 100

93 RP	4,485,733
168	4,485,734

CLASS 101

93.21	4,485,735
129	4,485,736
148	4,485,737
365	4,485,738

CLASS 102

200	4,485,739
293	4,485,740
331	4,485,741
430	4,485,742

CLASS 105

176	4,485,743

CLASS 106

1.22	4,486,233
18.14	4,486,234
177	4,486,119
287.12	4,486,235
299	4,486,236
308 Q	4,486,237

CLASS 108

51.1	4,485,744

CLASS 110

229	4,485,745
234	4,485,746
347	4,485,747

CLASS 112

110	4,485,748
121.12	4,485,749
158 E	4,485,750
163	4,485,751
221	4,485,752
262.2	4,485,753
262.3	4,485,754
292	4,485,755

CLASS 114

65 R	4,485,756

CLASS 118

44	4,485,757
52	4,485,758
503	4,485,759
657	4,485,760
702	4,485,761

CLASS 119

14.17	4,485,762
	4,485,763
18	4,485,764
51.13	4,485,765

CLASS 122

510	4,485,766

CLASS 123

41.15	4,485,767
48 B	4,485,768
61 R	4,485,769
90.39	4,485,770
142.5 E	4,485,771
179 B	4,485,772
188 M	4,485,773
	4,485,774
	4,485,775
198 F	4,485,776
	4,485,777
254	4,485,778
289	4,485,779
321	4,485,780
342	4,485,781
389	4,485,782
406	4,485,783
416	4,485,784
418	4,485,785
440	4,485,786
446	4,485,787
452	4,485,788
467	4,485,789
468	4,485,790
478	4,485,791
527	4,485,792
559	4,485,793
569	4,485,794
590	4,485,795
617	4,485,796

CLASS 124

35 A	4,485,798

CLASS 126

1 A	4,485,797
39 E	4,485,799
77	4,485,800
386	4,485,801
416	4,485,802
422	4,485,803
426	4,485,804

CLASS 128

1 R	4,485,805
	4,485,806
66	4,485,807
87 R	4,485,808
156	4,485,809
303.1	4,485,810
	4,485,811
303.15	4,485,812
327	4,485,814
329 R	4,485,815
334 R	4,485,816
	4,485,817
419 PG	4,485,818
633	4,485,820
660	4,485,819
663	4,485,821
675	4,485,813
719	4,485,822
739	4,485,823
756	4,485,824
774	4,485,825

CLASS 131

84 C	4,485,826
	4,485,827
276	4,485,828
291	4,485,829

CLASS 134

6	4,486,238
11	4,486,239
100	4,485,830

CLASS 137

1	4,485,831
38	4,485,832
240	4,485,840
315	4,485,841
489	4,485,842
514	4,485,843
515.7	4,485,844
614.04	4,485,845
625.64	4,485,846

CLASS 138

89	4,485,847

CLASS 139

25	4,485,848
107	4,485,849
435	4,485,850

CLASS 140

103	4,485,851
118	4,485,852

CLASS 141

1	4,485,853
4	4,485,854
198	4,485,856
316	4,485,855

CLASS 144

3 R	4,485,857
221	4,485,858
252 R	4,485,859
350	4,485,860
357	4,485,861

CLASS 145

3.1	4,485,862

CLASS 148

4	4,486,240

6.15 Z 4,486,241
11.5 A 4,486,242
12 R 4,486,243
12.7 A 4,486,244
13.1 4,486,245
18 4,486,246
31.5 4,486,247
145 4,486,248
154 4,486,249
433 4,486,250

CLASS 149

2 4,486,251

CLASS 152

209 R 4,485,833

CLASS 156

51 4,486,252
4,486,253
94 4,486,254
98 4,486,255
257 4,486,256
325 4,486,257
384 4,486,258
398 4,486,259
429 4,486,260
461 4,486,261
502 4,486,262
523 4,486,263
538 4,486,264
606 4,486,265
643 4,486,266

CLASS 162

25 4,486,267
123 4,486,268

CLASS 164

46 4,485,834
430 4,485,835
442 4,485,836
448 4,485,837
462 4,485,838
463 4,485,839

CLASS 165

11 R 4,485,864
42 4,485,863
76 4,485,865
90 4,485,866
173 4,485,867

CLASS 166

248 4,485,868
4,485,869
250 4,485,870
266 4,485,871
273 4,485,872
274 4,485,873
279 4,485,874
295 4,485,875
373 4,485,876

CLASS 169

48 4,485,877

CLASS 172

510 4,485,878

CLASS 174

34 4,486,619
41 4,486,620
50 4,486,621
52 H 4,486,622
113 R 4,486,623

CLASS 175

61 4,485,879
107 4,485,880

CLASS 177

211 4,485,881

CLASS 179

2 A 4,486,625
2 EB 4,486,624
18 DA 4,486,626
175.3 R 4,486,627
185 4,486,628

CLASS 180

68.6 4,485,882
142 4,485,883
219 4,485,884
227 4,485,885
247 4,485,886
287 4,485,887
297 4,485,888

CLASS 181

121 4,485,889
280 4,485,890

CLASS 182

9 4,485,891
161 4,485,892
234 4,485,893

CLASS 187

9 E 4,485,894
29 R 4,485,895

CLASS 188

72.5 4,485,896
73.39 4,485,897
230 B 4,485,898
277 4,485,899
282 4,485,900

CLASS 192

0.094 4,485,904
1 R 4,485,901
58 B 4,485,902
86 4,485,903
103 A 4,485,905
106.1 4,485,906
106.2 4,485,907
4,485,908
4,485,909

CLASS 193

36 4,485,910

CLASS 198

345 4,485,911
382 4,485,912
790 4,485,913
834 4,485,914

CLASS 200

6 A 4,486,629
52 R 4,486,630
144 B 4,486,631
148 A 4,486,632
4,486,635
148 R 4,486,633
4,486,634
255 4,486,636
340 4,486,637

CLASS 201

1 4,486,269

CLASS 202

201 4,486,270
248 4,486,271

CLASS 204

1 T 4,486,272
15 4,486,273
44 4,486,274
4,486,275
98 4,486,276
4,486,277
4,486,278
129.5 4,486,279
159.11 4,486,280
159.13 4,486,281
180 P 4,486,282
4,486,283
181 R 4,486,284
192 C 4,486,285
4,486,286
192 R 4,486,287
196 4,486,288
298 4,486,289
414 4,486,290
415 4,486,291
416 4,486,292

CLASS 206

1.5 4,485,915
45.34 4,485,916
278 4,485,917
366 4,485,918
370 4,485,919
468 4,485,920
471 4,485,921
485 4,485,922
508 4,485,923
511 4,485,924
534 4,485,925
602 4,485,926

CLASS 208

10 4,486,293
11 LE 4,486,294
96 4,486,295
111 4,486,296
211 4,486,297
253 4,486,298
356 4,486,299

CLASS 209

135 4,486,300
167 4,486,301
399 4,486,302
621 4,485,927

CLASS 210

87 4,486,303
107 4,486,304
227 4,486,305
230 4,486,306
275 4,486,307
502.1 4,486,308
525 4,486,309
604 4,486,310
635 4,486,311
656 4,486,312
681 4,486,313
714 4,486,314
772 4,486,315

CLASS 211

35 4,485,928
74 4,485,929
4,485,930

CLASS 213

4 4,485,931

CLASS 215

222 4,485,932
250 4,485,933
252 4,485,934

CLASS 219

10.51 4,486,638
10.55 B 4,486,639
10.55 E 4,486,640
10.79 4,486,641
69 W 4,486,642
85 CM 4,486,643
99 4,486,644
121 LN 4,486,645
130.1 4,486,646
137 WM 4,486,647
501 4,486,648
536 4,486,649
544 4,486,650
553 4,486,651
4,486,652

CLASS 220

270 4,485,935
316 4,485,936

CLASS 221

129 4,485,937
154 4,485,938

CLASS 222

129 4,485,939
129.1 4,485,940
146.5 4,485,941
4,485,942
256 4,485,943
390 4,485,944

CLASS 224

42.06 4,485,945
242 4,485,946
243 4,485,947
4,485,948

CLASS 226

2 4,485,949
74 4,485,950

CLASS 227

7 4,485,951
4,485,952
19 4,485,953
67 4,485,954
89 4,485,955
119 B1 4,019,666
147 4,485,956

CLASS 228

4.5 4,485,957
19 4,485,958
102 4,485,959
107 4,485,960
193 4,485,961

CLASS 229

7 S 4,485,963

CLASS 234

2 4,485,964

CLASS 235

449 4,486,653

CLASS 236

11 4,485,965
46 R 4,485,966

CLASS 238

226 4,485,967

CLASS 239

8 4,485,968
88 4,485,969
265.29 4,485,970
289 4,485,971
304 B1 3,784,110
498 B1 3,815,831
553.3 4,485,972
659 4,485,973

CLASS 241

30 4,485,974
182 4,485,975
186.2 4,485,976
230 4,485,977

CLASS 242

25 R 4,485,978
56 R 4,485,979
4,485,980
57 4,485,981
57.1 4,485,982
65 4,485,983
77.1 4,485,984
107.2 4,485,985
107.4 A 4,485,986
130.1 4,485,987
198 4,485,988
4,485,989
199 4,485,990

CLASS 244

49 4,485,991
90 R 4,485,992
135 B 4,485,993

CLASS 248

65 4,485,994
218.1 4,485,995
407 4,485,996
544 4,485,997
561 4,485,998
659 4,485,999

CLASS 249

23 4,486,000

CLASS 250

202 4,486,654
211 R 4,486,655
214 R 4,486,656
227 4,486,657
268 4,486,658
306 4,486,659
310 4,486,660
334 4,486,662
342 4,486,661
363 S 4,486,663
396 R 4,486,664
427 4,486,665
497.1 4,486,666

CLASS 251

61.3 4,486,001
214 4,486,002
328 4,486,003

CLASS 252

8.5 A 4,486,317
4,486,318
8.5 C 4,486,316
8.55 D 4,486,340
12.2 4,486,319
12.6 4,486,320
46.3 4,486,321
48.2 4,486,322
48.4 4,486,323
49.3 4,486,324
49.6 4,486,325
49.7 4,486,326
94 4,486,327
117 4,486,328
4,486,329
174.12 4,486,330
174.25 4,486,331
299.61 4,486,332
307 4,486,333
312 4,486,334
315.3 4,486,335
321 4,486,336
522 R 4,486,337
545 4,486,338
546 4,486,339

CLASS 254

2 B 4,486,004
29 A 4,486,005
88 4,486,006
376 4,486,007

CLASS 256

26 4,486,008

CLASS 260

112 B 4,486,341
112 G 4,486,342
4,486,343
121 4,486,344
123.5 4,486,345
239 A 4,486,349
245.86 4,486,350
349 4,486,351
397.1 4,486,352
412.4 4,486,353
465 E 4,486,354
465 G 4,486,355
501.12 4,486,356
502.4 R 4,486,357
502.5 F 4,486,358
4,486,359

CLASS 261

39 D 4,486,360
123 4,486,361
138 4,486,362

CLASS 264

1.4 4,486,363
1.7 4,486,364
24 4,486,365
25 4,486,366
39 4,486,367
46.7 4,486,368
51 4,486,369
53 4,486,370
78 4,486,371
137 4,486,372
142 4,486,373
156 4,486,374
250 Re.31,753
254 4,486,375
342 R 4,486,376
510 4,486,377
512 4,486,378
526 4,486,379

CLASS 266

114 4,486,009

CLASS 269

3 4,486,010

CLASS 270

55 4,486,011

CLASS 271

3 4,486,012
107 4,486,013
200 4,486,014
305 4,486,015

CLASS 272

78 4,486,016

CLASS 273

153 S 4,486,017
157 R 4,486,018
162 E 4,486,019
191 R 4,486,020
255 4,486,021
256 4,486,022
348 4,486,023

CLASS 277

3 4,486,024
31 4,486,025
80 4,486,026

CLASS 280

605 4,485,536
655 4,486,027
668 4,486,028
682 4,486,029
689 4,486,030
802 4,486,031

CLASS 281

46 4,486,032

CLASS 282

11.5 A Re.31,752

CLASS 283

94 4,486,033

CLASS 285

242 4,486,034
253 4,486,035
4,486,036
261 4,486,037

CLASS 290

1 B 4,486,668
1 R 4,486,038
4,486,667
44 4,486,669

CLASS 291

3 4,486,039

CLASS 292

160 4,486,040
221 4,486,041
246 4,486,042

CLASS 294

27 H 4,486,043
31.2 4,486,044
87 R 4,486,045

CLASS 296

1 S 4,486,046
65 A 4,486,047

CLASS 297

433 4,486,048

CLASS 299

1.5 R 4,485,962
7 4,486,049
18 4,486,050
78 4,486,051

CLASS 301

130 4,486,052

CLASS 303

119 4,486,053

CLASS 307

264 4,486,670
4,486,671
268 4,486,672
279 4,486,673
473 4,486,674

CLASS 308

6 C 4,486,054

CLASS 310

46 4,486,675
52 4,486,676
64 4,486,677
156 4,486,678
218 4,486,679
323 4,486,680
353 4,486,681
361 4,486,682
800 4,486,683

CLASS 312

216 4,486,057

CLASS 313

336 4,486,684
417 4,486,685
481 4,486,686

CLASS 315

14 4,486,687
83 4,486,688
92 4,486,689
151 4,486,690
241 P 4,486,691

CLASS 318

258 4,486,692
561 4,486,693
587 4,486,694
663 4,486,695
696 4,486,696
703 4,486,697
721 4,486,698
772 4,486,699
781 4,486,700

CLASS 322

2 R 4,486,701
28 4,486,702

CLASS 323

222 4,486,703
246 4,486,704

CLASS 324

73 R 4,486,705
133 4,486,706
142 4,486,707
179 4,486,710
309 4,486,708
314 4,486,709
319 4,486,711
329 4,486,712
4,486,713
376 4,486,714

CLASS 329

50 4,486,715
107 4,486,716

CLASS 330

149 4,486,718
286 4,486,719
298 4,486,720

CLASS 331

4 4,486,717
113 A Re.31,758

CLASS 333

1 4,486,721
17 M 4,486,722
4,486,723
194 4,486,724
248 4,486,725
260 4,486,726

CLASS 335

106 4,486,727
256 4,486,728
306 4,486,729

CLASS 336

69 4,486,730
212 4,486,731

CLASS 337
100 4,486,732
101 4,486,733
162 4,486,734
348 4,486,735
409 4,486,736

CLASS 338
22 R 4,486,737
320 4,486,738

CLASS 339
14 R 4,486,058
4,486,059
15 4,486,060
75 MP 4,486,061
91 R 4,486,062
97 C 4,486,063
99 R 4,486,064
103 B 4,486,065
176 MP 4,486,066
218 R 4,486,067
252 P 4,486,068

CLASS 340
347 DD 4,486,739
4,486,740
365 R 4,486,741
384 E 4,486,742
584 4,486,743
606 4,486,744
734 4,486,745
750 4,486,746
753 4,486,747
756 4,486,748
772 4,486,749
825 4,486,750
825.31 4,486,751
825.63 4,486,752
825.91 4,486,753
949 4,486,754

CLASS 343
6.5 LC 4,486,755
16 M 4,486,756
417 4,486,757
700 MS 4,486,758

CLASS 346
76 PH 4,486,759
107 R 4,486,760
161 4,486,761
207 4,486,762
209 4,486,763
4,486,764

CLASS 350
1.2 4,486,069
3.85 4,486,070
96.18 4,486,071
96.21 4,486,072
103 4,486,073
132 4,486,076
255 4,486,074
331 R 4,486,077
520 4,486,078
546 4,486,079
603 4,486,075

CLASS 351
206 4,486,080

CLASS 353
27 R 4,486,081

CLASS 354
6 4,486,082
203 4,486,083
246 4,486,084
312 4,486,085
413 4,486,086
434 4,486,087

CLASS 355
3 CH 4,486,088
3 DD 4,486,089
3 R 4,486,090
3 TR 4,486,091
8 4,486,092
29 4,486,093
76 4,486,094

CLASS 356
152 4,486,095
225 4,486,096
410 4,486,097
445 4,486,098

CLASS 357
13 4,486,765
15 4,486,766
23 4,486,767
38 4,486,768
41 4,486,769
46 4,486,770

CLASS 358
29 4,486,771
80 4,486,772
84 4,486,773
93 4,486,774
106 4,486,775
4,486,776
4,486,777
111 4,486,778
147 4,486,779
160 4,486,780
163 4,486,781
197 4,486,782
213 4,486,783
261 4,486,784
284 4,486,785
293 4,486,786
296 4,486,787
298 4,486,788
330 4,486,789
342 4,486,790
4,486,791

CLASS 360
10.2 4,486,792
30 4,486,793
70 4,486,794
77 4,486,795
4,486,796
78 4,486,797
103 4,486,798
130.23 4,486,799

CLASS 361
19 4,486,800
21 4,486,801
93 4,486,802
95 4,486,803
104 4,486,804
133 4,486,805
172 4,486,806
232 4,486,807
235 4,486,808
272 4,486,809
280 4,486,811
283 4,486,812
306 4,486,810
321 4,486,813
339 4,486,814
345 4,486,815
399 4,486,816
424 4,486,817

CLASS 362
65 4,486,818
142 4,486,819
183 4,486,820

CLASS 363
18 4,486,821
19 4,486,822
21 4,486,823
41 4,486,824

CLASS 364
146 4,486,830
200 4,486,825
4,486,826
4,486,827
4,486,828
4,486,829
4,486,831
4,486,832
4,486,833
4,486,834
414 4,486,835
422 4,486,836
424 4,486,837
424.1 4,486,838
426 4,486,839
469 4,485,497
474 4,486,840
4,486,841
513 4,486,842
4,486,843
559 4,486,844
4,486,845
607 4,486,846
705 4,486,847
715 4,486,848
4,486,849
747 4,486,850
770 4,486,851
900 4,486,852
4,486,853
4,486,854
4,486,855
4,486,856
4,486,857

CLASS 365
39 4,486,858
185 4,486,859
222 4,486,860

CLASS 366
76 4,486,100
99 4,486,099
101 4,486,101
182 4,486,102

CLASS 367
2 4,486,861
13 4,486,862
15 4,486,863
23 4,486,864
24 4,486,865
39 4,486,866
87 4,486,867
140 4,486,868
154 4,486,869

CLASS 369
32 4,486,870
67 4,486,871
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506	4,486,565	535	4,486,578		CLASS 536		CLASS 548	461	4,486,603	10	4,486,614
788	4,486,566		CLASS 526	7.1	4,486,584	183	4,486,594		CLASS 568	466	4,486,616
863	4,486,567	65	4,486,579	30	4,486,585	306	4,486,595	33	4,486,604	523	4,486,615
	CLASS 525	232	4,486,580		CLASS 544		CLASS 549	311	4,486,605	640	4,486,617
63	4,486,568	271	4,486,581	99	4,486,587	239	4,486,596	385	4,486,606	829	4,486,618
80	4,486,569	301	4,486,582	022	4,486,586		CLASS 562*	425	4,486,607		CLASS 604
93	4,486,570		CLASS 528	172	4,486,588	455	4,486,597	466	4,486,608	4	4,486,188
110	4,486,571	422	4,486,583	321	4,486,589	466	4,486,598	637	4,486,610	5	4,486,189
279	4,486,554		CLASS 530	334	4,486,590	469	4,486,599	653	4,486,611	67	4,486,190
283	4,486,572	501	4,486,346	371	4,486,591	567	4,486,600	734	4,486,609	330	4,486,191
285	4,486,573		CLASS 534		CLASS 546		CLASS 564	812	4,486,612	385	4,486,192
333.4	4,486,574	741	4,486,348	17	4,486,592	254	4,486,601	860	4,486,613	897	4,486,193
356	4,486,575										4,486,194
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D2—	310	276,569		320	276,586		162	276,602		144	276,617			276,633		8	276,649
	360	276,570		353	276,587		345	276,603	D16—	17	276,618		114	276,634		27	276,650
	400	276,571		373	276,588	D13—	3	276,604		38	276,619		148	276,635		36	276,652
		276,572		394	276,589		24	276,605		44	276,620		155	276,636		43	276,651
D3—	33	276,573	D9—	341	276,590			276,606		45	276,621			276,637		45	276,653
D6—	303	276,581			276,591	D14—	11	276,607			276,622		157	276,638		62	276,654
		276,582		383	276,592			276,608		130	276,623		161	276,639	D25—	25	276,655
	361	276,577		386	276,593		53	276,609			276,624		163	276,640		74	276,656
	366	276,575		420	276,594		71	276,610	D18—	7	276,625		165	276,641	D26—	37	276,658
		276,576		434	276,595		82	276,611	D20—	1	276,627		168	276,642		50	276,657
	397	276,580		435	276,596		114	276,578		2	276,626		188	276,643		118	276,659
	407	276,574			276,597			276,612		19	276,628		220	276,644	D28—	15	276,660
	408	276,579		443	276,598	D15—	28	276,613	D21—	27	276,629	D23—	25	276,645		20	276,661
D7—	101	276,583	D10—	120	276,599		69	276,614		37	276,630		69	276,646	D32—	23	276,662
	317	276,584	D12—	92	276,600		126	276,615		51	276,631		153	276,647	D34—	6	276,663
D8—	40	276,585		114	276,601		127	276,616		65	276,632	D24—	2	276,648			

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